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THE ILLUSTRATED

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All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jenner Fust, Editor of the JOURNAL OF AGRICULTURE, 4 Lincoln Avenue, Montreal. For subscriptions and advertisements address the Publishers.

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AND
A few choice one and two
Shear Imported Rams

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Send in your orders for young pigs at twenty dollars a pair not related.
We give a registered pedigree with every animal sold.

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Breeder of registered Canadian Cattle
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The only one on the market, which the horses can run without their work being bridled.



It affords us great pleasure to have it known that the improvements brought to our hay press "La Canadienne" have made it superior to all other horizontal presses working in the shape of half a circle. The fuller's course is 33 inches, that is from 6 to 9 inches longer than in any other horizontal press, which gives a wider opening to put the hay in and more speediness. Three men will do more work with our press "La Canadienne" than with any other press in the shape of a half circle, while it is much less tiresome for the horses. The materials employed are of the first quality, with the exception of two pieces of chilled cast iron, all the other parts are of steel and malleable cast iron.

We guarantee our press to work at the rate of 10 to 13 tons of hay every day without the horses being tired.

We manufacture four sizes of presses:

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We will send this press for trial to any responsible party.
Write for our Catalogue and list of prices.



The thrashing machine represented in the above engraving is our vibrating machine. It has a run of 29 inches long with teeth in steel guaranteed so that they can bend without breaking as the norway.

The iron work that support the drills is all in wrought iron which is very advantageous and economical as any blacksmith can make it, so that all long delays are avoided.

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The horse power runs on cast iron rails, all the shafts of the bridge are in steel and measure 2 of an inch which represents half a line of a larger size than those employed by the other manufacturers. All the shafts in the separator, the sieve and the horse power are in steel. We never use any iron shaft. Our machine is acknowledged to be the easiest to run and the one which lasts the longest.

We also manufacture a Canvas Separator with improved Railroad Horse Power; Railroad Upright Hay Press, Rod Upright Hay Press, Straw Cutter No. 9, 11, 13, Spring Harrows, 16 teeth; a Washing Machine patented May 1892.

We want active and responsible agents in all the localities where we have none yet.
Any farmer shall find it an economy and be certain to have the most improved machine in applying to us. We allow a special discount for orders sent by mail.

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THE ILLUSTRATED Journal of Agriculture

Montreal, October 1, 1893.

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Notes by the Way.

THE PRICE OF HAY.—Mr. Malone, an extensive exporter of hay, at Three Rivers, is reported to have said: "It is ridiculous for the farmers of Canada to suppose they will get fabulous prices for their hay this winter if they hold it long enough." As a matter of fact, the quotation cabled to Mr. Malone on Monday last September 4th, was only 85 shillings a ton C. F. and I. Making allowance, therefore, for the freight rates, which are not small, and the insurance, Canadian farmers need not expect more than \$5 a hundred bundles, or \$6.50 a ton of 2,000 lbs."

Now the quotations, given in the London market reports of the English papers of August 28th, put "Prime picked meadow-hay" at 180 shillings a load, the London load, as we explained before, being 36 trusses of 56 lbs. each = 2016 lbs.; and Canadian hay 130s. to 140s. per gross ton. Either Mr. Malone or Messrs. Dumbelton and Son, the hay-dealers at Cumberland market, London, whose circular we quote, makes a mistake.

Jerseys at the Provincial Exhibition.—We missed the Jerseys from the fine herds of Mr. Reburn and Mrs. Jones at the Montreal Fair. We suppose they were not able to be, like Sir B. Roche's bird, in two places at once, and were sent by their owners to Ottawa, or Sherbrooke, or Toronto. Is it wise to have four such shows held almost at the same time?

DEVONS AND POLLED ANGUS.—Not one Devon or one Polled Angus at the Fair!

THE HARAS NATIONAL.—The following card arrived, from Chicago, too late for insertion in the September number of the Journal:

"Haras National has won at the Great World's Fair, horse-competition:

Percheron classes, 4th prize with Voltaire;
" " 11th prize with Bonne Chance;

R. Ness " (Mares) 9th and 10th prize
Clydesdale " 7th "
On which remarkable success we beg to congratulate our friends most heartily.

LETTERS.—Will our friends be good enough to remember that all letters

concerning advertisements, as well as other business-matters, should be addressed to the publishers, Messrs. Senécal and Sons, 20 St. Vincent Street, and not to the editor?

HAMPSHIRE-DOWNS.—At last, after 15 years of constant work, we have succeeded in persuading a farmer (1) to import a flock of HAMPSHIRE-DOWNS!

SOUTH-DOWNS AND DORSETS.—Both these breeds of sheep came out well in quality at Mile-End. Mr. Shaw, as usual, won everything, in the South down class, except two 3rd prizes, which went to Messrs. Dawes, of La chine, and the Dorset prizes of course all went to Mr. McGillivray, firsts, and Mr. Harding, seconds. They were a very good lot indeed.

SHROPSHIRE.—The selection of Shropshires sent to the Exhibition by Mr. Greenshields, of Isalough Grange, Danville, did great credit to their owner, and still greater credit to his shepherd. They were turned out in the bloom of condition, and the shearing of these sheep and of Mr. Shaw's Southdowns were a perfect lesson to sheep-exhibitors in general. More than one good sheep in the show lost marks through clumsy shearing.

OXFORDS.—Mr. Gilmore, of Huntingdon, Q., after giving up breeding Oxfords for some time, has returned to his former loves. He has imported a very fine lot of sheep from the flocks of Albert Brassay and other well known breeders. We hope that, next year, the committee will give prizes of the same value as those given to the Southdowns and other sheep to the Oxfords and Hampshires.

It is curious enough to see how the former breed of sheep has improved. Ten years ago, the provenance of the Oxfords—Hampshire-downs and Cotswold—was easy to detect even in the show-sheep. It would puzzle any one to tell whence Mr. Gilmore's Oxfords derived their form, colour, or wool.

MERINOES.—Only one exhibitor of these queer little creatures, Mr. Shaw, of Glanford, Ont., who must have two sets of eyes, or else he could not breed such opposite sheep as South-downs and Merinoes to perfection.

COTSWOLDS, LINCOLNS, AND LEICESTERS, we say nothing about, as we do not profess to understand long-wool sheep; only, we hope no one will ask us to eat their mutton.

(1) Mr. John Kelley, Shakespeare, Ont. Last year, we were fortunate enough to get the combined class of "Oxfords and Hampshire-downs" divided, but the notice of this division was not given soon enough to admit of any sheep of this breed being imported. This year, however, our eyes were gratified with the sight of 5 pens of the descendants of our old friends.

Having been instrumental in securing the introduction of this valuable breed of sheep, we do not despair of sooner, or later succeeding in getting some enterprising patriot to import a small herd of true Dairy-Shorthorns. It is most unfortunate that those who were entrusted with the duty of providing the cows of that breed for the dairy-experiments at the Chicago fair should not have had some idea of the sort of cattle they were in search of. We will engage to say that on a small estate of some 2,000 acres we are acquainted with in Gloucestershire, England, we could select a hundred, or so, cows that would beat the Chicago lot out of the field.

SWINE.—The exhibits of these most useful creatures were about as good as they could be, but there were not as many competitors as there should be.

Messrs. Coxwork and Green, both of Ontario, divided all the prizes for Berkshires; Messrs. Dorsey and Featherstone did the same in the Suffolk classes, except that Mr. George, of Crampton, took one 1st for a young boar. The last named breeder distinguishing himself in Chester-whites, in which classes he won most of the prizes, and a fair share of the honours awarded to the Poland Chinas.

The Red-Tanwoods were exhibited here for the first time. A class was opened for them last year at the request of Mr. James Bell, of Ambor, Ont., but something or other prevented any being shown. We had never seen this breed since the year 1853, when we found them scattered here and there among the Shropshire dairy-farms, in the neighbourhood of Sir Baldwin Leighton's place, the name of which has escaped our memory. They are said to furnish more lean to the 100 lbs. of flesh than any breed extant; but, judging from the extreme length from the occipital bone to the nasal extremity, we should not like to buy hogs of this breed by live-weight, unless the head were, by agreement, previously removed. It seems to us that, however desirable it may be to do away with the lumps of fat we too often see in our pig-markets, even lean-meat may be bought too dear. Any how, Berkshires and Improved Yorkshires, like Mr. Greenshields' lot fed on barley- or corn-meal, skim-milk, and a few pease, are good enough for us.

Mr. Tait, of St. Laurent, Montreal, most deservedly won several prizes for his Improved Yorkshires. His 1st prize young sow is a model of what a pig of moderate size, good for roast-pork, for pickled-pork, and for hams and breakfast-rashers, ought to be. His breeding sow, with her 9 delicate nurslings, hard at work at the teats, and all evidently deriving plentiful nourishment from what Mr. Micawber calls "Nature's founts," made as pretty a show as anything in the Exhibition.

CATTLE.—Of course, many of the usual exhibitors at our provincial show had sent their picked lots to Chicago. In Jerseys, the absence of the stock of Mrs. Jones, of Brockville, and Mr. Reburn, of Ste-Anne de Bellevue, was not a hopeful feature, but Messrs. Dawes and Ekers—both Brewers, by the bye—showed good stock, more for use than show, and divided most of the awards between them.

As to the places assigned to the Guernseys in the prize-list, we shall only say that we should hardly have dealt with them as the judges did. We imported and bred Guernseys, from the Island into Kent, as long ago as 1850, and fancy we know something of the true form, &c., of the breed. Professor Long, the well-known English expert says: The Guernseys at the Chicago fair make it probable that Mr. Caldwell feels they are not calculated to do the breed credit; and he goes on to hint that as there has been no boom in this breed the judgment of an American as to the typical Guernsey differs very materially from that of the Englishman.

Presto of Préal, the bull in service in Sir John Abbott's herd of Guernseys in 1882, was the finest Guernsey bull we ever saw, and we imagine that we could distinguish his lines in the bull exhibited by Mr. McNish, of Lyon,

Ont. The Guernseys shown by the Rev. Trappist Fathers of Oka, did not suit our taste. Mr. Greenshield's young bull is a promising animal, but we prefer a more masculine head in a stock-getter. (1)

However, it is, at any rate, a good thing to know that there are now four or five breeders of the most useful of all dairy-cattle in the country barring, of course, our English Dairy-short-horns.

The *Ayrshires* were, as they always are here, a very high-class lot. We do not see how Mr. James Drummond's lot that took the 'Blue-ribbon,' the herd-prize, can be surpassed, and his cow that took the medal for the best single cow is the one we picked out of his herd in July 1892. The whole exhibits of *Ayrshires* were worthy of a II. C.

Only one lot of *Galloways* shown, from Mr. McClean, of Guelph, of course. No *Polled Angus*, no *Sussex*, no *Devons*. The *Shorthorns* were a moderate lot, and the *Herefords* were so covered up with sheets that we could form no opinion of their quality, though as they came principally from the herds of Messrs. Daves, of Lachine, and Fleming, of Weston, who divided the prizes, except two 3rds that went to Mr. Hodge, of St. Laurent, and Mr. Généreux, of l'Assomption, we may be sure that they were by no means so cond-rate.

As to *Canadian-Jerseys* we were told in the early part of the summer that there were to be no prizes for them. In spite of that, there were several shown by that excellent dairy-farmer, M. François Dion, of Ste-Thérèse, and others. They do not take the eye, but they look like butter-makers all over. Fifteen *Pure-bred Canadians*, registered, were exhibited, one of whom must be a wonder. Her owner told us that she gave 52 lbs. of milk a day, of which it only took 16 lbs. to make a pound of butter. This would give her a record of 22½ lbs a week! The cow might perhaps weigh 500 lbs., though we doubt it; so, she would produce her own weight in milk in less than ten days! Well; we should like to see her tested.

HORSES AT THE FAIR.—Mr. Bouthillier will, we hope, send us an article on the Exhibition of horses.

HORTICULTURAL EXHIBITION.—This department was nothing less than superb. It was by far the best we have ever seen. As Mr. George Moore, the well-known lecturer in the employment of the Department of Agriculture of the province, has promised us an article on this division of the show, we shall spare ourselves the pains of saying any more on the subject.

THE EXHIBITION as a whole was a successful one, in spite of the various impediments that beset its managers. The manufacturers seem to have rather held back, and the attendance, judging from the numbers present when we visited the show, was not up to expectation.

Although not in our department, we cannot help mentioning the charming lot of 2-wheel and 4-wheel dog-carts exhibited by M. Larivière, of Montreal. Thirty odd years ago, when we first came to Montreal, the general style of carriage building was caddish in the extreme, and the colours employed in the decoration of the wood-

(1) Mr. McNish bought Sir John Abbott's Guernseys this summer.

work, cushions, &c., simply *loud*. Now, this is all changed, and we saw in this department at least a dozen single and pair-horse carriages that no English gentleman would be ashamed to be seen in.

CLOVER-HAY, AGAIN.—When passing a couple of months on a farm this summer, we naturally took great interest in the operations carried on there, particularly in the method pursued in making clover into hay.

The first crop was sowed on the 10th July, at least ten days after it was at its best. Being so forward, it was cocked the same day, and carried, after being broken out of cock, on the 13th.

The second crop, we succeeded, by constant worrying, in getting out when in full vigour of growth, the heads being just in full bloom, on August 15th, an interval of 36 days thus elapsing between the two cuts.

The farmer, unwisely in our opinion, persisted in putting the clover in cock the same afternoon, and on the following morning, at 5.30, we found, on examination, that the inside of the cocks was, not warm, but scalding hot, the hay soaking wet and, in colour, a dark-brown. This is a plain statement, utterly void of exaggeration: the farmer's face when we called his attention to the condition of the hay, was worth seeing. Of course, as soon as the dew was off, the cocks were broken out, the hay left exposed all that day and the following night, recocked on the 17th, broken out of cock and carried, in a rather clung condition, on the 19th, the loss of leaf at each moving of the half-made hay was, as may be well imagined, enormous.

Break out permanent meadow- or timothy-grass as soon as cut; turn it as often as you can spare labour to do so; put it into "grass-cocks" the first night, and into larger cocks the next night, stirring it as much as possible all the day-time; but let the clover-hay lie till the upper part of the swaths is wilted; then turn it over as gently as possible, and when the then upper side is also wilted, get it into large, well-combed-down cocks, and when fit carry it from the cocks to the barn, or, preferably, to the stack.

If you let clover stand till it is ripe, as most people do here, you may treat it as you please; but if you cut it when in its most nutritious state, that is, when the majority of heads are in fairly full bloom, the above process will be found the best and most labour-saving way of making clover-hay.

POTATOES.—The crop of this excellent, on the light soils on the side-hills of the Valley of the Ottawa seems to be very heavy this season. The tubers are large, in fact, very large, and come to table in a splendidly floury condition. We have not yet heard of much disease in the crop, on the soils we speak of, though, doubtless, on the heavier land along the bottoms, the usual disease will be severely felt owing to the great rainfall of the 28th and 29th August, when rather more than 5 inches fell at Montreal, equal to one fifth of the entire annual rainfall, including snow, of the south-eastern counties of England!

RAINFALL IN THE LONDON DISTRICT.—As a general impression prevails, among the non-travelled part of our community, that "it is always raining in England," we append a statement of the monthly rainfall in the

home-counties of Middlesex, Sunney, &c., for the year 1892. See Whitaker, for 1893.

	Inches.
Jan.....	0.39
Feb.....	1.68
March.....	1.10
April.....	1.42
May.....	1.66
June.....	2.29
July.....	1.55
August.....	3.03
Sept.....	2.02
Oct.....	3.88
Nov.....	2.01
Dec.....	2.68

23.71

This is perhaps about half an inch of annual rainfall less than the average. The rainfall in the province of Quebec averages yearly—including snow—about 36 inches, but this we quote from memory.

COUCH GRASS.—As we read an article, by Mr. Henry Stewart, in the *Country Gentleman*, entitled "Management of Quack Grass," we imagined that this was a newly discovered grass, and were not a little astonished to find that it was only "an old foe with a new face," i. e., *couch*, the *triticum repens* of the botanists. Mr. Stewart recommends the careful preservation of another weed, *Mushlinbergia Mex.*, strange as it may appear, and says that it promises to take full possession of the field after the clover is cut.....My cattle are now filling themselves with this grass, and enjoying themselves amazingly. I have weighed out the sod of quack freed from soil and well shaken out, with all the roots and fibres attached, and found it to weigh nearly 4 lbs. to the square foot;..... this is equal to 80 tons per acre of vegetable matter, which I consider equal to ordinary manure. The cows prefer it to timothy- or orchard grass.

Mr. Stewart advises farmers to grow this grass—he is not joking, indeed, dear reader—as a permanent meadow. Our consolation is that "when it has taken full possession of a piece of land, it is more easily killed than when it is thin and scattered." If any more weeds are worthy of cultivation, or preservation, we should be glad to know what they are, as, up to the present time, we have been earnestly striving to inculcate on our readers the necessity of utterly extirpating weeds of every description.

BOYS.—Boys are delightful creatures, but when sent to bring the cows home they should not hurry them as they generally do. The cows is a very susceptible animal and kind treatment is by no means wasted upon her.

TROTTER HORSES.—What a lottery is the breeding of horses of any description! We bred hunters for some years in England, and never once succeeded in creating our ideal horse. And the most risky of all horse-breeding is breeding trotters. If the colts have not the gift of great speed, they have nothing, as they are too light for ordinary farm-work, and not one colt in a dozen turns out a really fast one. We are glad to see that Dr. Couture agrees with us on this matter. (1)

POULTRY.—Dr. Hoskins, of the Vermont Watchman, says that the best Mr. Moore's article on this subject shall appear next month.—E.

all-round fowls that will lay fairly well and that, when killed and dressed will furnish a fine, large, plump, and delicately-flavoured carcass, are the *Plymouth Rocks* and the *Wyandottes*. This is true enough as far as it goes, but a yellow- or dark-legged fowl is not a pretty sight when boiled, so we must be pardoned for standing up for the "Colored Dorking," which lays fairly, is hardy enough, and fattens easily, with a cut on the breast that exceeds in depth that of any other breed. The only thing we know against them is that they do not like heavy clay-soils.

AMERICAN WHEAT.—Many people imagine that the people of the States export wheat to Europe. This is quite a mistake. Wheat, as was shown many years ago by Prof Fawcett, the blind Secretary of State, is not exported by American dealers, but is bought by foreign agents and shipped on foreign account.

GRASSES FOR LAWNS.—Why will people persist in mixing timothy with their lawn grasses. A glance at the *Western Park*, near the *Hospital*, will show even a careless observer that the consequence of adding timothy to the finer grasses is to get a quick cover of a very coarse, stubby grass, that overpowers the finer kinds, and completely spoils the turf. Perennial rye-grass, meadow-fescue, sheep's fescue, red top, June-grass, and white-clover, make the most velvety turf that can be grown. Mow and roll constantly: the closer the grasses are mown, the quicker and the denser will be their growth. Bone meal and wood ashes help the turf vastly.

RAIN OR SUN.—At a meeting of farmers in Montreal last spring, some of those present seemed to think that more damage is done to the hay crop by sun and wind than by rain. Well, that depends. If the grass is mown when in full vigor of life, as it should be, it will stand two or three days' rain in the swathe without much loss of quality. The damage is done to overripe hay in half the time, or to hay partly cured. If clover is cut on the green side, it will bear a day and a half in the swathe without turning. As for wind injuring hay, that is a perfectly novel idea to us as we have always regarded a breezy day with plenty of sun as being the ideal hay-making weather. Meadow hay and timothy, in this part of the world, are not kept stirred enough; clover-hay is stirred too much.

HAY-MAKING.—Mr. Trenholme, of Montreal Junction, who has made from 120 to 150 tons of hay annually for some years, holds, with us, "that meadows should never be cut late in the season; if there is much to cut, the mowing should be begun a little before the right time or a portion of the crop would become too ripe. Hay cut early was worth more for dairy-purposes than hay cut late, as it contained more nutriment. In all cases, hay should be got into cock as soon as it was fit, and taken directly from the cock to the barn."

CHEMICAL ANALYSIS OF SOILS.—The chemical analysis of soils is not now thought to be of so much importance as formerly; probably, because it has been found that practical analysis of

soils, by experiment, has taken its place. If, as we see in the reports of one of the stations in the States, the peach growers of New-Jersey have doubled their crop "by acting on the advice of the chemist at the station," and using potash, any ordinary farmer of intelligence could have rendered their reference to the chemist unnecessary by tilling them that worn-out sandy land is always grateful for a dressing of wood ashes.

PORK.—Again, if the chemist tells us that nitrogenous foods make lean pork, any common English farmer would observe that his countrymen had been giving pease and skim-milk to their hogs from time immemorial.

PRACTICE, therefore, in our opinion, has made use of foods and manures, and theory has stopped in and, most beneficially, explained why the foods and manures have been efficient.

GUERLOT.—After a good deal of investigation, we find that the name of the weed we have mentioned several times in this publication, is not *guerlot*, as commonly pronounced, but *grelot*, a word signifying *little bells*, and evidently derived from *grêle* = hail. The botanical name is *lobelia*.

CATTLE AT THE CHICAGO FAIR.—We are told that Mr. Valancey Fuller travelled 23,000 miles, and through 23 States, to get his selection of Jerseys together, and that the A. J. C. C. allowed him \$25,000 for his expenses, &c. The sum furnished Mr. Caldwell on the part of the Guernsey men was only \$5,000, and Prof. Long, in his report of the lot, speaks as follows:

"Great things have been expected from the big dairy display at the World's Fair. Two big things have so far resulted—a very perfect trial of dairy cattle, which, in spite of its one-sided nature, will remain as a wonderful instance of scientific testing, and a great victory for Canadian dairymen. I was unable to see in Chicago any feature in the working dairy itself which especially commends itself to British readers, for I believe we do the work better altogether. The test of the three breeds, Jerseys, Guernsey, and Shorthorns, is, so far as its comparative value is concerned, worthless; from other points of view it is admirable. There are in the United States, unquestionably, Jerseys of great butter-making merit. These have been freely drawn upon by the Jersey Cattle Club, which I am informed placed 25,000 dols. in the hands of Mr. Valancey Fuller with the object of obtaining a collection of twenty-five representative cows, and this gentleman spent six months in the work, with the result that his herd will win, hands down, and the cows will still milk well when they go back to their owners. The Guernseys in the States are few, and of very mediocre quality; they have been neither boomed nor subjected to costly produce tests. Very little money was spent in obtaining from owners specimen cattle, and the collection in the Guernsey barn is, from a British point of view, inferior. The Shorthorns—well, the least said about our national dairy-breed the better. There are a few useful animals, but I could select from fifty Cheshire herds a far better collection than is fighting for the honour of the Dairy-shorthorn in No. 3 barn on the shores of Lake Michigan. The competition

is no competition at all, it is a bare trial between the best available teams representing three important breeds, one of which is extensively cultivated throughout the States, while the others are comparatively little known or understood. No, the interest in the trials relates wholly and solely to the elaborate system which is being carried out by some very excellent men of science and practice."

The first 30 days milk and butter yield of the three herds—where were the Ayrshires?—is thus stated officially:

	Milk lbs.	Butter. lbs.
Jerseys.....	25,392	1,477
Shorthorns.....	24,765	1,004
Guernseys.....	22,401	1,225

At the end of the week, July 21st to 27th, the Jerseys were far ahead in their milk yield, the produce of the week being—

	lb.
Jerseys.....	5,659
Shorthorns.....	4,867
Guernseys.....	4,482

Thus, it will be observed that things called Dairy-shorthorns only gave between 28 and 29 pounds of poor milk a day. Why, on earth, were cattle of this kind entered at all? One would almost suspect that 'an enemy had done this!'

"Curiously, the Jersey tops the list as a cheesemaker, making more and better cheese than the other breeds. For each pound 9.10 lb. of milk were required, whereas it required 9.67 lb. of Guernsey milk, and 11.31 lb. of Shorthorn milk: but this is not English experience. I trust our friends on the other side will not accept this as Shorthorn data. The cheese test lasted from May 16th to May 25th in reality, although it commenced May 11th. The cows received, in addition to the foods already named, hay, silage, and maize meal. The following was the result:—

	Milk. lb.	Cheese. lb.	Grain in weight. lb.	Value of Produce. \$	Cost Food. \$	Net profits. \$
Jersey herd.....	13,296	1,451	327	217	98	119
Guernsey herd.....	10,938	1,130	480	164	76	88
Shorthorn herd.....	12,186	1,077	709	180	99	81"

The samples of Cheddar-cheese, of United-States production—the Canadian exhibit Mr Long was too late to taste—are put down in the report as but moderate, much inferior, in fact, to the best English make: the butter, very bad.

Farm Operations---October.

THE ROOT HARVEST.—Although Mr. J. X. Perrault said at the Meeting of the Ensilage Society, last February, that the French-Canadians would not grow roots, on account of the labour their cultivation absorbed, we are glad to know that in certain parts of the province, Sorel for instance, there are fields of roots to be seen, grown by French Canadians, that would do credit to the best farmed districts of the United Kingdom.

All roots should be safe in the root-house or cellar, in this part of the province, by the 20th or 25th of October. The most tender, the mangels, should be secured first, then, the carrots, and, last of all, the hardiest, the swedes.

To pull all these on well cultivated land is easy enough, unless red-carrots are grown, for the Belgian, the best for all purposes, grows well out of the ground, and yields to a very little force. A piece of old scythe, stuck into a wooden handle, will serve to trim the tops of swedes and carrots; the leaves of the mangels should be wrenched off, as that root does not like bleeding. Take care that the men do not strike the knife into the swedes as a handy way of lifting them: swedes are hardy enough, but even a swede will rot out its juices when wounded.

As the carrots will be required at once for the cows and horses, they should occupy a part of the cellar where they can be got at easily. Mangels, being the last roots to enter into consumption, may be packed away at the back.

We do not say anything about parsnips, as hardly any are grown here, except by market-gardeners. They can remain in the ground all the winter, if it is thought worth while; but, in our opinion, they should be stored, though as late as possible, as this root is much improved in sweetness by a touch of frost. The digging of parsnips, left out till spring, causes a great mess, as the land is generally too wet to be properly meddled with, and the subsequent drought makes it a mass of steely lumps.

We object to earthing-up any crop except celery: it confines the range of the roots. But, on heavy land, where the loose earth between the drills is 4 or 5 inches deep—as it ought to be—we should feel inclined to run the double-mouldboard plough between the drills before carting off the roots, to prevent the poaching of the land. This would not involve much labour or take up much time, as it would suffice to plough out 3 drills, for the horse and wheels of the cart, every 20 yards, say, and the pullers having, of course, thrown the roots into heaps, they can be easily cast into the cart as it passes between the rows of heaps.

Silage-maize.—The harvesting of this crop has been so well and so practically treated by Mr. Fisher, Mr. Barnard, and others, that we beg to refer our readers to the various articles, by these gentlemen, in the reports of the Dairyman's Association, the Farmers' Congress, &c. And we do this the more readily as we never filled a silo in our life, and we are not accustomed to describe operations we never practically performed.

Fall-ploughing is not universally approved of here; probably, because a broad furrow, laid over flat, as too many furrows still are, does not benefit much by the operation, the spring rains beating it still flatter. But a well laid up furrow, ten by seven inches, or thereabouts, lets the rain pass through between the crests of the plough-furrow, and yields readily to the attacks of the harrows. Water-furrowing should be particularly attended to on slopes, side hills, &c. Only fancy the time that would be saved in the sowing season, if all land intended for grain were ploughed in the autumn!

Dairy-cattle will of course be all housed at night, and begin their course of winter-feeding. We hope to see a vast quantity of butter made in the cold season. Fine idea, feeding cows from November to May and getting no return from them for their keep!

The ewes, now being put to the ram, should be in good condition. Poor ewes rarely twin, and twins are really desirable, unless you mean to use your sheep only as scavengers to clean up the weeds of the farm. Pea straw, clover,

and a few roots, will do the ewes well during pregnancy, timothy hay, give to the horses: it is wasteful to feed cows or ewes on it.

Horses will have hard work this month, what with carting off roots, deep-ploughing, &c. As there are no horse-beans grown here—or next to none—a few pease will help the teams wonderfully—say half a bushel a week and 6 pecks of sound oats, with chaffed clover and straw, and long hay in their racks at suppering-up time. A peck or so of carrots daily, in addition to their hard food, will prevent the change from grass to dry-meat being too sudden. If you have any young horses to sell, remember that a pound of linseed ground up with a few oats to prevent clogging the mill-stones, given daily, will make their coats glisten beautifully.

Swine ought to be in their warm winter-quarters towards the end of this month. The spring-pigs are, or ought to be, in a pretty forward state, and some of them must be nearly ready for the knife. As you will, we trust, have plenty of skim milk, from your fall-calved cows, there will be no want of stuff to push the autumn-farrowed pigs along. By the end of January, these ought to be fit for the West-end Montreal trade, and if well fed on the dairy-refuse, pease, and corn- or barley-meal, should pay well. Neat, tender, young pigs of, say 16 to 20 weeks old, are always saleable in Montreal throughout the winter. It is a pity they are so rarely met with. They should be fat, but not too fat, and the Improved Yorkshires, like those of Mr. Tait, of St-Laurent, or of Mr. Greenshields, of Danville, are about the best sort.

Buildings—It would be well, if you can spare the time, to look to the state of the warmth and ventilation of the cowshed and stables, lest an early winter set in and you be taken unprepared. Mr. Gilbert's valuable articles on poultry will afford all necessary information about their treatment.

The Farm.

ENGLISH CROPS: 1893.

CORN CROPS, 1893.

	Wheat.	Barley.	Oats.	Beans.	Peas.
Over average...	38	50	50	11	29
Average.....	117	18	101	29	80
Under average	294	292	363	262	155
Total.....	449	450	514	302	264

PERCENTAGES, 1893.

Over average...	8.5	11.1	9.7	3.6	11.0
Average.....	26.0	24.0	19.7	9.6	30.3
Under average	65.5	64.9	70.6	86.8	58.7
Total.....	100	100	100	100	100

HAY, POTATOES, AND ROOTS 1893.

	Hay.	Pota- toes.	Tur- nips.	Man- gels.
Over average...	9	228	138	71
Average.....	21	147	151	103
Under average..	479	95	199	264
Total.....	509	470	488	438

PERCENTAGES, 1893.

Over average...	1.8	48.5	28.3	16.2
Average.....	4.1	31.3	30.9	23.5
Under average..	94.1	20.2	40.8	60.3
Total.....	100	100	100	100

We give next the comparative percentage tables, so far as they are available, for the seven years ending with 1893, and for the bad year 1879:—

PERCENTAGES.

Years.	Wheat.		Barley.	
	Aver. Under age.	Over.	Aver. Under age.	Over.
1879	10.0	24.0	75.0	4.0
1887	52.3	41.3	6.4	4.8
1888	7.0	21.5	71.5	34.8
1889	48.6	42.7	8.7	2.5
1890	17.5	52.6	30.1	37.1
1891	23.2	57.1	19.4	31.5
1892	10.8	38.1	51.1	50.0
1893	8.5	26.0	65.5	11.1

Years.	Oats.		Beans.	
	Aver. Under age.	Over.	Aver. Under age.	Over.
1879	20.0	57.0	23.0	4.5
1887	2.2	17.0	80.8	0.0
1888	30.0	40.0	30.0	25.1
1889	27.5	46.0	26.5	21.6
1890	41.0	49.0	7.0	56.1
1891	11.0	36.3	49.7	11.2
1892	15.0	33.1	51.7	5.4
1893	9.7	19.7	70.6	3.6

Years.	Peas.		Hay.	
	Aver. Under age.	Over.	Aver. Under age.	Over.
1879	4.0	37.0	66.0	—
1887	2.5	60.0	37.5	—
1888	19.8	29.9	50.3	53.6
1889	22.2	46.2	31.6	89.0
1890	36.5	49.0	14.5	27.3
1891	21.7	56.0	22.3	4.8
1892	12.7	45.5	41.8	7.5
1893	11.0	30.3	58.7	1.5

Years.	Potatoes.		Turnips.	
	Aver. Under age.	Over.	Aver. Under age.	Over.
1888	54.0	22.8	23.2	37.6
1889	56.7	35.0	8.3	48.3
1890	36.7	37.8	25.5	51.3
1891	41.4	63.2	5.4	39.9
1892	44.8	48.8	6.4	24.1
1893	48.5	31.3	20.2	28.3

Years.	Mangels.		
	Over.	Average.	Under.
1888	37.6	36.3	26.1
1889	44.1	39.2	16.7
1890	37.6	42.2	20.2
1891	15.3	51.5	30.2
1892	24.4	50.4	25.3
1893	16.2	23.5	60.3

KEEP THE CLOVER.

Let the buyers have the timothy hay, and keep the clover for your own use. It is an unusual condition that calls from Europe for hay, but when prices go as high as they are reported it will pay to sell. The horsemen of the world in nearly every case pay more for timothy than for clover; basing their preference more, no doubt, on the best condition than on the nutrients in the hay. Horsemen feed oats more than general farmers and get nutrients from them, while the farmer who feeds corn must feed something better, and clover hay is to his hand for that purpose. Whether the high prices received for hay will continue during the winter is not known since shipments are being made and will continue while the dearth continues in the drouth stricken districts of Europe.—*Farm and Dairy.*

This is good advice. Good clover hay contains nearly twice as much digestible albuminoids per pound as does good timothy hay. Oats are nearly thirty per cent richer than corn in digestible albuminoids. The albuminoids are very largely the muscle and milk forming portion of food.

It is not very profitable to sell hay at any time, as you thereby sell the fertility of your farm, but if you have both clover and timothy and must sell either, keep the clover and sell the timothy.

(Hoard's Dairyman.)

HARVESTING CORN. (1)

The system which has been adopted on the Ontario Experimental Farm, Guelph, and found to be very satisfactory, is given in the 1892 annual report of that institution, from which we take the following:—The crop is in the best condition for harvesting when the corn in the ear has reached what is known as the glazed state, but when there is a large amount to be harvested the work had better begin when the grain is in the late milk stage, lest some of it should become too ripe. Some advocate cutting corn with hooks, and some with the mowing machine. A limited number have tried a reaper with elevators attached, and high enough to deliver the corn into a wagon driven alongside. This way of harvesting corn may yet become common, although it can scarcely be said to be completely satisfactory as yet. We have used a sled made by one of the graduates of the college. It consists of two flat runners, 5 feet 2 inches long, and bevelled in front like the runners of a stone boat. They are made up of hardwood, and are 2 3/4 inches broad, and 5 inches high. They are kept in place by three cross pieces. Over this frame is a covering of inch boards 2 feet 6 inches wide. The knives consist of two pieces of hardwood, shaped somewhat like a V, with a piece of an old cross-cut saw bolted on the outer edge of each, which is sharpened and cuts the corn when the sled is in motion. The knives are hinged on a boat in front, and the rear part may be pushed under the platform to adjust the width of the boat to any variation that may be found in the width of the rows of corn. The knives are held in position at the rear by a bolt, which may be removed at will. The length of the knife is 20 inches, and the narrowest width at base is 9 1/2 inches; the greatest width is 16 inches. Four

(1) For silage, we suppose. Ed.

stakes are placed in position, and a rope attached to these a short distance above the platform. The feet of the two men who stand inside are protected by this rope from any danger that may arise of being wounded in case of falling off in front of the knife. The drawing attachment is the coil of an old scrapper. The two men who stand upon the platform catch the corn as it falls, and lay it down in sheaves on each side of the boat. A boy rides the horse. From six to eight acres may thus be cut in a day. We would strongly advise farmers who have a considerable amount of corn to cut and have not a satisfactory machine for cutting it, to try the sled as used on the college farm. It will not cost much to have one made, and it will last for years if put in a dry shed when not in use.

(Farmer's Advocate.)

THE COMING FODDER FAMINE.

Mr. R. H. Paget, writing to the *Times* on this subject, gives some sensible advice. He says: "The long-wished for rains may be upon us, and action must be swift. At any sacrifice fodder must be produced, or our cattle will starve. Where arable land is available something should be sown—something which will grow quickly. There should be no sparing of manure, and the four-course system, with its wheat crop, should at any rate for this year go to the wall. We want the advice of the best experts to aid us in the selection of a crop. What is it to be? Rye, oats, wheat, vetches, quick-growing grasses; even mustard might be of some use; in short, anything eatable and bulky. Where pasture only is available it might be worth while to give a dressing of nitrate of soda, and, even at the risk of temporary impoverishment, secure a present crop. There will be small chance of haymaking, and we must be prepared for extensive silage. The Board of Agriculture would do well to circulate information of the best method of carrying this out. No doubt foreign hay will be largely imported, but Canadian hay is now selling in Bristol at £7 per ton, and to any one acquainted with the requirements of a dairy of 45 or 50 cows it is clear that such a price is prohibitory. It is of course possible that exceptionally mild, growing, favourable weather from now to Christmas may, to some considerable extent, help us in our difficulties, but, failing such good fortune, I can see nothing ahead for our flocks and herds but the dire disasters of slaughter or starvation. There is good reason to believe that in Scotland and the North of England there is no failure in hay crops; but in the south and west of England there is grave reason for fear. We must gird up our loins and boldly grapple with the difficulty, and, as my last word, I would suggest that great agricultural societies, such as the 'Royal,' might well take this matter in hand, and, by speedy issue of well-digested proposals, at any rate, set us all a-thinking how best to meet impending trouble." (1)

CROP AND STOCK PROSPECTS IN ENGLAND.

After an unusual spell of hot dry weather the thermometer, which in some districts registered as much as

(1) We print this to show how great is the variety of "catch crops" that can be grown in our country as well as in England. Ed.

100 degrees in the shade, fell, and cold rains and bleak winds followed. How far the disaster of the year will be retrieved by those Midsummer rains cannot yet be said. That they will do much good is certain, but it is feared that for many crops the time of growth is nearly over. The great consideration at the present moment is for the fodder crops. Hay is generally a failure up to now; stocks were never so short, and all green crops have still to make most of their growth. The whole world is being searched to find hay, which is now selling in London as high as £8 10s. a ton. In fact, it is reported that a contract for the coming six months has been made at this price for supplying the Hounslow Barracks, and it is generally felt that the contract is one favourable to the military authorities. Even in the northern counties, where the situation is generally more favourable than further south, the fodder famine is attaining serious proportions. Stock is being sent into the markets half-fattened, the result being a glut and ruinous prices. If the rains should bring on a quick growth the green food will be at once used for present consumption, and but little provision for winter keep will be possible. Wheat is still the best crop of the year, and is rapidly ripening, and in one or two cases it is expected to be ready to cut by the end of the month. (July) Generally, however, the plant is described as thin and the straw short. Barley and oats are varied. Roots are likely to benefit by the rains more than any other crop, but with these reports are bad. The corn trade still continues in a bad way, and prices for home-grown wheat still go down. The average price is now 26s. 9d., a drop of 2d. per quarter on the week; barley is 2s. 3d., a drop of 2d.; and oats 21s. 3d., a rise of 2d. Farm live stock continues fairly healthy, and the latest returns published by the Board of Agriculture are more satisfactory, so far as pleuro-pneumonia is concerned.

PRESERVING AND IMPROVING PASTURES.

GEORGE E. NEWELL, NEW YORK.

There is no necessity for having short pasturage in summer, unless the heavens fail to supply moisture. In the dairy region of Central New York, we generally enjoy plenty of summer rain, and the two principal causes of deficiency of grazing are, overstocking the fields, and neglect. It is common for sheep and horses to run with cows. Sheep, by close feeding, secure the most nutritious part of the grass, and colts, if pastured with cows, annoy and worry them by their playful or vicious antics. Quiet and peaceful possession of the grazing lot is essential to the comfort and profit of milch cows. To remain plentiful the grass should have a chance to grow a little faster than the cows eat it off. Some dairymen will take young stock from outside to pasture when they have not acres enough to properly pasture their own cows. This bad custom is quite prevalent, and frequently accounts for the premature drying off of the midsummer milk yield on many farms.

On the poorer pastures, where the dry weather of midsummer stops the growth of the nutritious grasses, the cows will give much less milk unless an additional ration of fodder or grain is given, to supplement the failing pasture. The Cornell University experiment station has tried the feeding of grain to milch cows at pasture,

Never before since 1879 have we received so many returns, representing all crops without exception as below average. Moreover, the greatness of the deficiencies stated by a number of correspondents is unfortunately remarkable, and it is only by reading the full reports, which occupy a large portion of our space to-day, that an adequate conception of the deficiency of the present harvest can be formed. The details, too, show great variations for different parts of the country, the reports from some of them being almost uniformly bad.

(Ag. Gazette.)

GRAIN FOR COWS ON PASTURE.

When cows are first turned on pasture, we have found that to continue the grain ration until the pasture is abundant is an advantage whether milk or butter production is the object sought. The same grain ration fed in winter may be used, but in decreasing quantities, and when the pasture becomes abundant, it should cease altogether. During the continuance of the period of abundant and succulent pastures, no form of grain ration that may be used will repay the outlay so far as increased milk production is concerned, but the question as to the saving effected in the amount of grass eaten from the pastures has yet to be determined. Until this is done, we should not be justified in saying that grain fed to cows in milk was wasted so long as they had free access to abundant pastures. As soon as the fresh pastures begin to fail, a grain supplement should again be given. Its component parts should embrace, so far as possible, grains which the locality will produce freely. In this country—about Guelph, Canada—it would mean the free use of ground oats, barley and peas, in the proportions of, say, two or three, one and one.

[PROF.] THOS. SHAW.

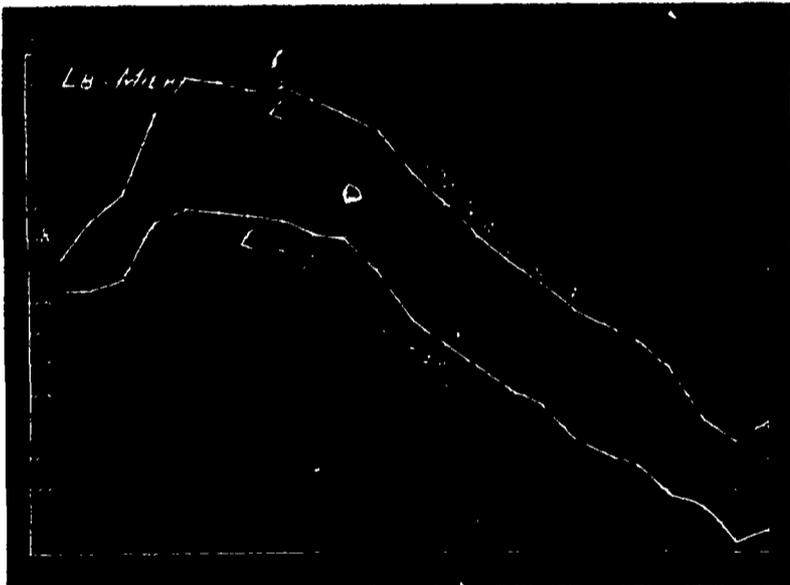
and the results are shown in the accompanying diagrams by the curved lines, which show the great increase in both milk and butter. Every night and morning each cow was fed a half gallon of a grain ration, composed of two parts corn meal, one part bran, and one part cotton-seed meal. The cows also gained rapidly in flesh.

A system of general good farming however, will keep the grass in such sufficient supply that it will not thus be necessary to feed grain at this season. At all events, it is far better to maintain a permanent and productive pasture turf from which a full yield of milk may be produced, than to depend upon a costly grain diet for the same result. It is quite as important for profit to reduce the cost of milk production, as it is to raise the price of dairy goods. It is an obvious fact that the average pastures in this State are not as productive as they have been in former years. There are areas of hill country, where but little good grass remains in the grazing fields, these nutritious species having been run out and replaced by a sort of fuzzy wire grass that soon becomes sere and brown. The botanists call it *Danthonia*, but it would be as worthless by any other name. Now, permanent pastures are what we want, provided that they are seeded to nutritious grasses. The great importance of this

the whole pasture cannot be benefited in this way, a portion of it may be, which would in a drought otherwise be dry and verdureless. If willows are encouraged to grow along the banks of these meadow and pasture streams, their shade will not only prevent a rapid evaporation of the moisture but will prevent a gullying away and destruction of the banks in time of freshets. Let us try to do more to build up our long neglected pastures. There is hardly any part of the farm on which a judicious outlay of money and well directed labor brings better and much more profitable returns than can be secured by the systematic, timely and careful improvement of our pastures. (*American Agriculturist.*)

SHADE FOR STOCK.

Stock of all kinds are not unlike mankind in some respects, and seek the shade whenever possible during the extreme heat of summer. To gratify this desire, shade should be provided wherever practicable, and the cheapest manner of doing this is through the medium of shade trees. One or two should be set out in each pasture, and be protected by a fence until thoroughly established. If the field be tilled, set the trees along the south line, selecting those of rapid growth and spreading branches. If



INCREASED MILK FLOW WHEN GRAIN IS ADDED TO PASTURE.

subject is not appreciated by dairymen. As the pastures run out and become less productive the dairymen turns to forage crops raised on other parts of the farm to make up the deficiency in feed. This is all right as a supplement for pasturage, but it is not good management to let the pastures lie unproductive, while depending wholly upon soiling crops. The pastures are the main stay after all, and on their productiveness dairying must stand or fall. If the pasture lot is treeless, plant shade trees at intervals; if it does not yield varieties of grass suitable for abundant milk production, break it up and reseed it to such as are more profitable. Fertilize a sterile pasture, and protect the sources of the springs that water it. Our fathers reclaimed these fields from the forest; we must reclaim them from the neglected and unprofitable condition into which they have fallen. Sometimes a brook or rivulet flowing through the grazing field may be utilised for purposes of irrigation, when the weather becomes dry. This plan involves little expense, and where the lay of the land makes it practicable, is an efficacious way of preventing a mid-summer decrease in the pasturage and milk yield. Although

they be fruit trees, they should be trimmed to a height of at least seven feet, and then allowed to branch out. While the trees are growing, it would be simply humane to provide a temporary shelter of some kind, such as setting a few posts, and covering with poles, upon which are thrown branches of evergreens, or even limbs of oak or other trees in full leaf. (1) This will afford a useful shelter, and if located upon a knoll or other naturally poor portion of the field, it will thoroughly enrich the soil. By changing its position yearly, various portions of the field will be benefited. All this takes but a little time, and can be done when other work is not pressing. By boarding up, late in the summer, the side from which the prevailing winds blow, a fair protection from the chilling blasts will be obtained, and the stock will return you the cost.

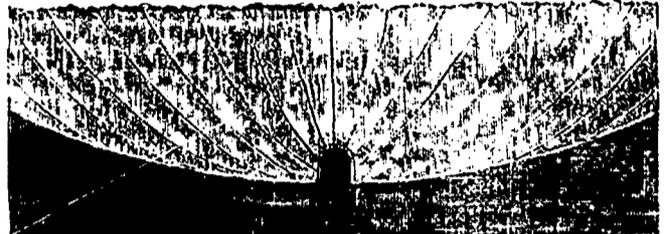
WHERE WATER ENTERS THE TILE DRAIN.

L. D. SNOOK.

Most farmers think that the water enters the tile drain only from the soil

(1) Far better build rough sheds than hinder the plough by shade-trees.—Ed.

above. This is certainly a wrong impression, and while it is true that the water in the soil immediately over the drain may enter the tile at or near the top, yet that three feet to each side settles nearly perpendicularly until it strikes the water-soaked soil, and then the natural force of gravity, atmospheric pressure, and absorptive attraction, causes it to enter the drain either at the bottom, or through the joints in the tile near the bottom. (1) The progress of water toward the tile is shown by the lines in the engraving. Immediately over the drain the course is downward; a little farther away the course is a little out of the perpendicular, falling until it strikes the water-



SECTION OF TILE-DRAINED LAND.

soaked soil. Should a section of an underdrain be examined a few hours after a heavy shower, the soil immediately over and in contact with the upper soil of the tile will be found quite dry, while the nearer the bottom of the tile is approached, the greater amount of moisture will be found, while at the bottom it will be completely water soaked. Hence, it is useless to place sods or other porous material over the top of tile at the joints, for the purpose of allowing the water to enter. (2) In fact, sod, hay, straw, or other vegetable matter, is the very worst covering to use, as it is only a matter of a few months when it will perish, leaving a greater or less space, that in time particles of earth will fall or wash into and very much of this loose material finds its way into the drain, often causing stoppage and trouble. For horsehoe tile, a covering of a piece of tough paper, at the joints, is the best thing possible, and may extend down the sides to within half an inch of the bottom. Often, by turning a tile end for end, a better joint is made. Fit them close. There is no danger of getting them too tight. EX.

THE FARMER OF THE FUTURE.

Mental, no less than physical perfection, will be the characteristic of the successful farmer henceforth.

The beauty, purity, and true manliness of a farmer's life should therefore be greatly in advance of the days when so much hard labour had to be performed thus wearing the energies to such an extent as to give very little opportunity for study.

It can scarcely be expected that men who have been plodding along for thirty, forty, or fifty years should appreciate the necessity of cultivating their intellects to enable them the better to cultivate their land. But even these should not be too old to learn, but remember that a teachable spirit should remain to the end of life. We have numerous examples in past history and at the present time, that the heart and brain of a healthy and sensible man never grows old.

A will, and a determination, are the chief factors in the achievement of knowledge, let the age of the student be

(1) This we have explained a dozen times before, but a good lesson loses nothing by repetition.—Ed.
(2) Good.—Ed.

what it may. The greatest statesmen have introduced some of the most important and salutary measures at a period of their lives when it would be supposed their mental faculties would have been weakened by the infirmities of age. Look at Gladstone, who is trying to pass a law before the most determined opposition and the manipulation of which requires the most severe application of all the forces of his nature. Sophocles, Simonides, Theophrastus, Cato, Goethe, after they were eighty, wrote poems which are classics to day, and numerous other instances could be quoted to show that age is no bar to success—in the attainment and the uses of know-

ledge. Then let us old farmers not be clogs upon the energies of our young men by sticking to our antiquated notions, but fall into line and be ready to adopt such methods as the modern inventions and teaching of science may suggest.

There is an old saying that "the child is father to the man."

The present generation, however, have such advantages as never occurred to the minds of a former one, and they who do not benefit by them are greatly in fault.

It is difficult for a man of mature years to realise the wonderful changes that have taken place since the early part of the present century.

Then, machinery for agricultural purposes was almost unknown. Agricultural Chemistry, Entomology, Botany, and the other sciences were not dreamed of as being necessary to the education of a farmer. Muscle was the chief necessity; even reading, writing and arithmetic were deemed superfluous accomplishments in many cases—and the fool of the family was considered wise enough to be made a farmer. These ideas are exploded in this age of electricity and steam, and to keep up with the speed of the present age the farmer must be educated to the profession, if he is to succeed, as much as the Lawyer, the Physician or the Divine.

Among all the social and political events of the century, in any country, none are of greater importance than the improved system of agriculture. Upon the prosperity of the farmer, the hinges of society are hung, and, notwithstanding all the talk of legislation in his behalf, this prosperity depends chiefly upon himself.

As things now stand, over-production of an article of inferior quality only leads to failure. The public, of all classes, have learned to discriminate as to excellence or mediocrity in farm products, and the inferior cannot be disposed of while the superior meets a ready sale; therefore, we want to adopt means by which all we produce is as nearly first class as possible.

To accomplish this, every farm operation must be intelligently performed. The nature of soils must be studied; the influence and quality of fertilising materials understood, the breeds of cattle most suitable to the surroundings taken into consideration and the most economical foods as to profitable results, must be maturely thought of and provided.

"Never begin anything of which thou hast not well considered the end" is a proverb particularly adapted to the farmer. Probable profits should always be carefully calculated, and allowances made for untoward circumstances.

There used to be a line of demarcation made between the farmer and the business man: this exists no longer—the farmer should be as much a man of business as the merchant or the manufacturer, make calculations as to the outcome of his various ventures, keep as strict accounts, and attend to his business daily with equal punctuality and assiduity.

As a farmer, he is a tiller of the soil, but as to the products thereof he may be said to be a manufacturer, the earth and all the elements being his conditors, the manure and seed his raw material, and his cattle and other animals his machines from which the manufactured article is obtained.

Then, he is a merchant, for he has to be continually buying and selling and therefore he must cultivate quick and correct ideas of the quality and value of the articles bought and sold, he should make himself conversant with the public question of demand and supply, so as to be able to use circumstances to his advantage instead of being controlled by them.

Public affairs should occupy some portion of the farmer's attention. We hear too much from farmers about class legislation being against them—they can obviate this by voting honestly, frequently and intelligently, and to do so no small qualification is necessary. They can still further obviate it by qualifying themselves to take their seats in the halls of the Legislature, instead of leaving all their interests in the hands of tradesmen, property owners or professional men.

The education of the masses is a matter of great interest to the farmer, not only as to his own family, but the help he has to employ will be all the more useful if educated. The days of pack horses and galley slaves are past, and it is no longer true that... a little learning is a dangerous thing. No, we want intelligent help to run our machinery, to manage our stock, to feed our cattle, and not mere human machines, as of yore, to do the muscular part of the work.

If the education is well commenced, men of strong brains as well as sinews and noble minded women will be raised in our rural districts, and even if they do not all remain, the whole community must experience good. It is however not in the public common schools and colleges that the education can be completed, but the Farmers' Institutes may be made even a more practical means of educating our embryo agriculturists, because, there, their powers of observation will be encouraged and strengthened not only by listening to the papers and discussions, but by taking an active part in the proceedings; and not only by this means will they be instructed in their chosen profession, but inspired with confidence when they become members of the great community in which they will take their important places, many of them, it is to be hoped, as leaders in all acts of philanthropy, who will give a tone and aspect of good to the great body politic.

And be it remembered that a farmer's education does not end while he lives, and the farmer of the future will always be a student and will never think he knows enough.

When the farmer is better grounded and confident in his profession he will have more confidence in himself; his wife, family and friends will have

greater confidence in him, no social intellectual or political barriers will intervene between him and his purpose: he will be a man amongst men; he will be attached to his home and occupation; his successors will inherit his farm from generation to generation; and to each one it will be a bank of deposit for increased fertility, wealth, and happiness.

The time is at hand when the drudging, plodding old fashioned drone must step out and give way to the painstaking busy bee who will gather the honey and store it for the public good.

The world's increased and ever increasing population demands that its agricultural resources be increased proportionately. There is a wide field open before us for the consumption of our products; thanks to quick means of communication and rapid transit our market is the whole world. This province is especially suited to the dairy industry and we are at the head of the class in it at present. Let us not lose the proud position we have attained—but encouraged by success—acquire all the useful knowledge necessary to keep it; and by this, added to thrift, enterprise and perseverance, we shall make an enviable notoriety for ourselves and our country, and generations yet unborn shall rise up and call us blessed.

Another source of satisfaction to us should be that the governments of all progressive countries are recognising the rights and necessities of farmers, and giving them all the encouragement possible as to the means of instruction necessary to success, by enacting such laws as will be likely to give them a fair chance to practise their occupation successfully.

This old province of Quebec has also woke up to the situation. The agricultural department never was so active and painstaking as at present, let us strengthen their hands.

GEORGE MOORE.

Entomology.



THE HORN-FLY.

The above is an enlarged figure of the cattle fly which is now causing so much loss to farmers throughout Ontario and Quebec. It is generally known as the "Horn-fly," from its habit of resting in large numbers upon the horns of cattle. It is also for some unaccountable reason often referred to as the "Texas fly." This is only the second year since it first appeared in Canada, but it has increased and spread so quickly that it has produced great consternation among cattle owners. The frequent assertion that the flies or the maggots have caused the death of cattle by boring into the horns, head or body, is entirely inaccurate: the whole injury is due to the bites of

the fly; however, the irritation from this cause is in many cases so great that animals fall off rapidly both in flesh and yield of milk.

The life history is briefly as follows:—The mature flies appear early in spring and lay their eggs upon the fresh droppings of cattle. These soon hatch, and the maggots live in the dung while it is in a moist condition. They then turn to the pupa state, and the flies again appear within two or three weeks from the time the eggs were laid. There can thus be several broods in a season.

REMEDIES.

Almost any greasy substance rubbed on the animal will keep the flies away for several days. A number of experiments were tried in the field, with the result that train oil alone and train-oil or lard with a little sulphur, oil or tar or carbolic acid added, will keep the flies away for from five to six days while with a small proportion of carbolic acid it will have a healing effect upon any sores which may have formed. Axle grease, tallow, and any such greasy substance can be used to advantage, but train-oil or fish-oil seem to be more lasting in their effects than any others experimented with.

An effective and undoubtedly the easiest remedy to apply, if a small spray pump be used, is the Kerosene emulsion; which consists of the following:—Kerosene (coal oil), 2 quarts; rain water, 1 quart; common hard soap, 2 oz. Boil the soap in the water till all is dissolved; then while boiling hot, turn it into the coal oil, and churn it constantly and forcibly with a syringe or force pump for five minutes, when it will be of a smooth creamy nature. If the emulsion be perfect, it will adhere to the surface of glass without oiliness. As it cools it thickens into a jelly-like mass. This gives the stock emulsion, which must be diluted before using with nine times its measure, that is, twenty-seven quarts of water. It will be found to mix much more easily if done at once, before it cools. The above proportions give

three quarts of the stock emulsion which with twenty-seven quarts of water added make up thirty quarts of the mixture ready for use. This may be applied to the animals either by means of a sponge, or, what will certainly be found most convenient where there are many animals to treat, by means of a force pump and spray nozzle. The emulsion thus made and sprayed over the cattle kills all the flies it reaches, and if repeated twice a week will almost entirely relieve cattle from annoyance. Another method of diluting the coal oil is to make the emulsion with milk instead of soap and water. Take sour milk, one part; coal oil, two parts. Mix the two thoroughly, as described above for the soap emulsion. Then dilute

with water, so that one part in ten will be coal oil.

A good way to fight this pest will doubtless be to prevent it from breeding and increasing. As stated above, the maggots can live only in the moist droppings of cattle. Any means, therefore, which will ensure the drying up of these before they are full grown, will destroy them. This can be done most easily by spreading the dung out in the pastures regularly and at short intervals. Twice a week would be sufficient, and it would be equally effective in wet weather, when the substance would be washed away, as in hot weather, when it would be dried up.

Where the flies gather in large numbers, on the ceilings and walls of stables in cool weather, or when driven from the cattle by applications, they can be destroyed either by spraying them with the Kerosene emulsion or a strong decoction of Pyrethrum Insect Powder. Dusting them with dry Pyrethrum powder by means of an "insect gun" would also be effective.

Hoping that the above will be of service to your readers, believe me to be

Yours very truly,

J. FLETCHER,

Entomologist and Botanist,
Dominion Experimental Farms.

Central Experimental Farm,
Ottawa, 16th August, 1893.

Manures.

MUST USE FERTILISER OR QUIT.

"You use commercial fertilizers How much per acre?"

"About 150 pound of acidulated bone; but I expect to try pure bone."

"How much does it add to the yield of the crop?"

"There is an increase of a least one third per acre, and in some places of one-half or more."

"Since you commenced using fertilizers, what has been your yield?"

"On us thin land at my first trial I got nearly 23 bushels per acre. I am satisfied that the land would not have produced more than seven bushels without the fertilizer. I know what I am talking about, as I left places without fertilizer to test the matter, and my conclusions are as stated. My second test brought me 30 bushels per acre. In this was a new-ground piece that had been in corn two years, then sowed to wheat on October 17, and it yielded 20½ bushels. Without the fertilizer it could not have produced more than half so much. Another thing—the fertilizer improves the quality of the grain and makes it three to five days earlier in ripening."

"Your third year's experience with fertilizer is even better, is it not?"

"Yes, sir; I got 32 bushels per acre and should have had a much better yield had it not lodged before filling. About 10 acres out of 21 fell down, and of course the wheat there was not of as good quality. Some may think the fertilizer made it fall, but it did not, for it fell just as badly where none had been used, as I left places to test the fertilizer. Wheat may fall because too thick, but not on account of the fertilizer, and I find that 300 pounds of fertilizer per acre do not give an appreciable difference in quality over the 150 pounds. It is but proper to say here that my land yields, on an average, one year with another, 60 bushels of corn per acre."

HOW TO KNOW WHAT IT COSTS

On what basis do you figure?

I take 40 acres as a basis, as this is one day's thrashing, or 1,200 bushels.

Six days' disc harrowing.....	\$15 00
Six days' drag harrowing.....	15 00
Six days' drilling.....	15 00
Sixty bushels of seed wheat, at 70 cent per bu.....	42 00

THIS FOR 1892.

Three tons commercial fertilizer, at \$33 per ton.....	100 00
Four days' cutting.....	12 00
Using my own team and harvester.	
Twine, 50 cents per acre.....	20 00
Three shockers, four days.....	24 00
Board, four days, four hands, at 10 cents per day.....	8 00
Board, three horses, four days.....	6 00
Six teams, one day hauling to thrasher.....	15 00
One team hauling wheat from machine.....	2 50
15 hands.....	22 50
Board for 27 men.....	13 50
Board for 16 horses.....	8 00
Thrashing 1,200 bushels, at four cents.....	48 00

Cost, 40 acres.....	366 50
Cost, one acre.....	9 16
1,200 bushels sold at 65 cents per bushel.....	780 00
One acre (30 bushels per acre).....	19 50
Profit on one acre—Cost, \$9.16, yield, \$19.50.....	10 34
Cost per bushel.....	30
Profit per bushel.....	35
One acre, 25 bushels per acre—Cost of producing.....	8 96
25 bushels, at 75 cents.....	16 25
Profit.....	7 29
Cost per bushel.....	36
Profit.....	29
One acre, 20 bushels per acre, at 6 cents per bush.....	13 00
Cost of producing.....	8 76
Profit.....	4 24
Cost per bushel.....	43
Profit.....	22
15 bushels per acre at 65 cents per bushel.....	9 75
Cost.....	8 56
Profit.....	1 19
Cost per bushel.....	57
Profit per bushel.....	08
10 bushels per acre at 65 cents per bushel.....	6 50
Expense.....	8 36
Loss.....	1 80
Cost per bushel.....	83
Loss per bushel.....	17

These figures of the cost per acre include 150 pounds of commercial fertilizer.

“What per cent will this give you on the money invested in the land?”

“Having figured the profits per acre you can arrive at the interest per acre on the money invested; say the land is worth \$100 per acre:

Profit on 30 bushels at 65 cents per bushel.....	\$10 34
Over 10 per cent on the money invested.	
25 bushels per acre. Profit over seven per cent.	
20 bushels per acre. Profit over four per cent.	
15 bushels per acre. Profit one per cent.	

“The lower the value of the land, the greater the percentage of profit. Thus:

30 bushels per acre on \$50 land, 20 per cent [profit]	
20 bushels per acre on \$50 land, eight per cent profit	

In having the experience of this practical farmer, I hope many of my readers will find much encouragement to continue their efforts in improved wheat culture. It will be noticed that Mr. Cory has said nothing about the straw. He leaves this out to balance discrepancies in the calculation, as many will no doubt think he has figured too closely in the matter of expenses; if he has not, the straw will add much to the per cent of profit in the eyes of the Eastern farmers, as well as of others who have learned the

value of this ‘poor man’s hay’ as roughage and when used for bedding and as an absorbent. The calculations as made will just suit the farmer who applies a match to his straw piles as soon as the thrasher leaves the yard, or allows them to rot where the thrasher left them.

Ross County, O.

JOHN M. JAMISON.

B. N. Yorker.

Poultry-Yard.

Their care and management—The sitting hens and their proper handling—Care and treatment of the chickens from time of hatching—Generous food and attention necessary—Details of management.

BY A G. GILBERT, MANAGER OF POULTRY DEPARTMENT, CENTRAL EXPERIMENTAL FARM, OTTAWA.

In our last article, attention was given to rations conducive to egg production in winter. The importance of farmers obtaining eggs in winter, when the highest prices are obtained, is obvious and hardly requires further remark. While on the subject of winter rations, the importance of cut green bones as an incentive to eggs production must not be overlooked. The green bones of the animals slaughtered on the farm, or the bones usually thrown away by the butcher as “no good”, when cut up make the best egg producer known. It is a mistake to imagine that in order to make the hens lay in winter a large quantity of grain must be fed. The necessity of exercise and “green stuff” has already been enforced, in a previous article, and must not be forgotten. We come now to

THE MANAGEMENT OF SITTING HENS.

Where incubators are not in use, and they are comparatively unknown to the farmer as yet, the sitting hen is an important factor and has to be properly managed. In early spring, when egg shells are apt to be thin, a fowl of medium size is to be preferred, a larger and heavier one is apt to crush the eggs. Later in the season when the fowls have the opportunity to run outside, and as a result egg shells will be stronger, any sort of sitters may be utilised. A good plan, when possible, is to set 2 or 4 hens at the same time, and when the chickens are hatched, take them from one hen and give to the other and reset the one, or two hens as the case may be. This practice is an advantage where sitters are scarce. Care should be taken to rid the bodies of the sitters of any vermin that may be on them, before putting them on the eggs. This can be done by dusting the nest liberally with carbolic acid or disinfecting powder. China eggs should be placed in the nests and the broody hen allowed to sit on them for two days. The imitation eggs should then be taken away and the valuable eggs substituted for them. Any lice meanwhile will probably be driven from the hen and she will be able to sit in comfort and quiet which she would not be able to do if infested with vermin. It is of the utmost importance that the sitters should be free from vermin before the eggs to hatch out, often of very great value, are given to her. The nest should be made so large that the hen can get into it and on the eggs, without at once stepping on the latter. Food and drink should always be near the sitters, and a dust bath close at hand, for the latter is the means where-

by she will keep herself free from vermin. In the early part of the season Indian corn is the best food to give, for it will free the crop quicker than smaller grain. A mixed food for the sitters is recommended by Prof. Wesley Mills of McGill University. In the hands of experienced persons, all the eggs under the sitters are tested on the fourth, fifth or sixth day, and the infertile eggs removed and given to a certain number of hens, the other hens being given fresh eggs. The following points will be found useful to remember:—

1. For an early sitters select a medium sized hen.
2. In the early part of the season give 11 eggs. More are apt to be chilled, unless the nest is in a very warm place.
3. If possible set two hens, about the same time. On the fifth or sixth day test the eggs, remove the infertile ones and give the remainder to one hen, resetting the other.
4. The nest should be made of cut straw, and placed in a quiet spot away from the laying stock. It should be dusted with carbolic disinfecting powder.
5. China eggs should be placed in the nest, and the sitters allowed to remain on them for two days before the valuable eggs are given to her.
6. Meanwhile, the carbolic disinfecting powder has probably rid the body of any vermin.
7. During the hatching period, the nest and hen should occasionally be dusted with disinfecting powder.
8. The sitters and eggs should be examined every morning to see if all be right.
9. Should an egg be broken in the nest, the others ought to be at once taken out, gently washed in luke warm water and replaced under the sitters. If soiled, the nest straw should be replaced by clean stuff.

THE CHICKENS THEIR PROPER CARE AND TREATMENT.

It is only labour lost to care for the sitting hens and allow the chickens to perish from lack of proper care and food. In my experimental farm report of last January, I remarked on that point as follows, and I copy the extract because I think it important enough to justify repetition here. “The proper care of young chicks is most important and indispensable to their quick maturing, as market fowls or early layers, and yet few farmers push their young stock with the proper food and frequent feedings absolutely necessary to make plump chickens for market. It is poor economy to hatch out a number of chickens and allow them to die for want of care, proper housing or food, and yet the money lost to the farmers of the country every year from all the causes mentioned is very great. With a little exertion, a better quality of poultry could be put on the market by the farmers, and superior quality would soon result in better price. It may be said that young chickens demand close and frequent attention. May not the same be said of every department of the farm? With this difference, that poultry will make a quicker return from date of hatching than any other live stock on the farm. With proper management the cockerels should be marketable in three to four months, and in five to five and a half months the early pullets should be layers, at a time when eggs are high in price. And such results should be obtained in many cases with food, much of which would otherwise be wasted.”

While the chickens are hatching out,

the sitters should not be disturbed. If molested or annoyed, the mothers are apt to become restless and crush the little ones to death. After hatching out, the chicks should be allowed to remain in the nests for 24 hours, so as to become strong or thoroughly “nest ripe.” As to subsequent treatment, I can do no better than to quote my instructions to farmers given in my report of 1890 as follows:—

The chicks were allowed to remain under the hens for 18 or 24 hours, until thoroughly dried. With the mothers they were then placed in coops outside in the sunshine. If hatched before the grass had grown, they were kept indoors the bottom of the coop being covered with sand. The dry board floor would soon have used the little ones up, literally put them off their legs. Previous to being put into the coop with her brood the hen was fed and allowed to drink apart from the chicks, otherwise she would have greedily eaten up the dainty food intended for the tender youngsters. It must be remembered that for two or three days or nights the careful mother has not left her nest, for had she done so while the chickens were hatching (except in very warm weather), there would have been no chicks: as a result, she is so hungry and thirsty that she will voraciously eat and drink what is placed near her.

HOW THE CHICKS WERE FED.

As in previous years, the bread and milk system of feeding was adopted and proved highly satisfactory. The bread was soaked in milk, squeezed dry and so fed. Dry bread crumbs were also given. As the chickens progressed, their bread and milk diet was gradually changed to the less expensive one of shorts, cornmeal, bran, table scraps, ground meat, with all the wheat or crushed corn they could eat for their last ration. When very young, the chicks were fed about once every hour, a little at a time, but often, so as not to allow them to get hungry. As they grew older, they were fed once every two hours, and as they increased in size, the rations were gradually made more substantial, but reduced in number. It is important that the chickens should be sent to rest with their crops full. A critical part of the chicken's life is the five weeks, while it is getting its feathers. At this period all the resources of the system are drawn upon to supply the growing feathers, besides flesh, bone, muscle, &c., &c., and it is necessary that the chickens should be generously fed on a variety of the most nourishing food. A chick stunted of food, or allowed to hunt for its living, as is too frequently the case, at this period of its growth, will never make a large fowl, indeed, if allowed to become stunted from either of the causes named, no subsequent care will make amends for past neglect. To have poultry of large size for table use, it is imperative that they should be pushed from the earliest date of their existence. This is well understood in Great Britain and France where raising choice poultry for market is made an important source of revenue to the farmers. If easily procured, milk, sweet, skimmed or sour, given as a drink, or mixed in their food, or left in open dishes to take as they please, is one of the best incentives to vigorous growth that can be given. If not milk, then pure water should be regularly furnished and put into shallow pans. The water should not be allowed to get hot from exposure to the sun. The first chickens to be placed in the coops outside were Plymouth

Rocks, White Leghorns and Houdans. They were exposed for the first two or three weeks of their existence to the bitterly cold north west winds which marked the last week of April and the first two weeks of May. Being well fed and cared for, they not only stood the trying ordeal well, but made good growth. Had they not been generously and frequently fed they would have been "dwarfed," or if they had been left to shift for themselves, as the majority of early chicks are, they would have quickly succumbed. Where effort of any kind has been made to secure a brood, or broods of chickens, it will pay well to see to their future growth.

EARLY HATCHED CHICKENS.

The chickens should be hatched as early as possible, for the earlier hatched the earlier will the pullet lay. There is a difficulty sometimes in obtaining early sitters, but were the farmers' hens to lay as well in winter as they should do, and would do, if properly managed, there would be no scarcity of sitters. It is certainly an advantage to have as many chickens bought out at the same date, and it is not advisable to hatch out eggs after the month of June. The chicks bought out in July do not seem to do as well as those of May or June. Of course, in the case of a regularly established poultry farm chickens are hatched out by means of incubators and reared in brooders at all seasons of the year. But we have to deal with the farmers, as they are, and it is better to go slow and sure at first. It is always to be remembered that it is better to begin with a few hens and when successful with them go on to further success with a greater number. At another time the further progress of the chicks will be taken up.

Apiary.

TRANSFERRING.

In the *ADVOCATE* for June 15th a correspondent criticises the instructions given by me in the issue of May 15th to a subscriber, who wished to know how to get extracted honey from a few colonies of bees which he had in box hives. After carefully reading what Mr. Ferguson has to say, I can see no reason to change or modify my position in the least. While much he says about transferring is true, it fails to affect in any way the advice criticised. He seems to forget that I was advising a novice and not an expert bee-keeper, and in his haste to make a criticism contradicts himself. I might have given some such instructions as his to an experienced hand and head, but no inexperienced hand could carry them out. I advised the box-hive man to let his bees swarm as usual, putting the swarms in the new movable frame hives, and in twenty-one or twenty-two days from the first swarm, when the combs would be entirely free from brood, to transfer comb and bees to the new hives; and by extracting the honey from the combs he would have no difficulty. Mr. Ferguson says the combs will, it is true, be free of brood in twenty-one days, but that a number of young queens will have hatched out and swarmed "with considerable loss to the owner, unless he is vigilant, etc." Now, what I am quite unable to understand is, how any more young queens than usual would be hatched out in the old hive

in consequence of using a movable frame hive for the first swarm from it instead of a box hive; how they would be any more liable to swarm a second or third time in consequence of that new hive for the first swarm; or how the proprietor would be any more liable to "loss" from swarms in consequence of that new hive; or how any more "vigilance" would be required in dealing with a second swarm just because the first had put in a "patent hive"! There is something here either very deep or very absurd, and I incline to the latter hypothesis. Mr. F. probably knows as well as I do, that the box-hive bee-keeper does not have his queens clipped, and hence has to hive his swarms, whether first or second, in the old regulation way. In this way he hives his first swarms, his second and his third, if he has any; and for the life of me I cannot see how taking a new departure and putting the first swarm into a movable frame hive is going to interfere with his doing the same thing with the second, should it come out, or how his liability to "loss" is going to be increased thereby! He can hive as many swarms as may come out after the first, the same as he has always been doing, only using different hives; and when the twenty-one days are up, and with infinitely more prospect of success than there would be in following Mr. F.'s advice.

The next objection made is that there will be too much honey in the combs twenty-one days after swarming for transferring; and that "honey presents a much greater obstacle to transferring than brood." I deny this; it does not. The honey may be extracted from the combs, which I advised "Subscriber" to do; but brood cannot be extracted. And if brood be present in the combs in all stages—as it certainly is when the first swarm issues, and at the time Mr. F. advises the transferring to be done—the novice is sure to make a very bad botch of it. When the first swarm issues the combs are full of brood and honey, and no beginner could begin to extract the honey at such a time. He would throw out larvae and honey promiscuously, and have a fine mess! Even the professional is doing wrong when he attempts that, except in case of necessity, and there is really no necessity in following that plan of transferring. But in twenty-one days after the first swarm, when the combs are entirely free from brood, the honey may be extracted readily.

Farmer's Advocate.

The Flock.

PRACTICAL TALKS ABOUT RAPE

Farmers who have fed it.

THE QUESTIONS.

1. Is it a profitable crop to grow for sheep? 2. Do you grow it after some other crop? How late can it be sown? 3. Do you turn the sheep on to pasture it? 4. Have you ever cut and fed it green in the barn? 5. Have you fed it to other live stock? 6. Can you advise sheep men generally to raise rape?

FOR SOILING SHOW SHEEP.

1. It is a profitable crop for late feed. 2. I do not grow it after any other crop. 3. No. 4. I cut and feed it green in the barn when fitting sheep for show purposes. 5. I have not fed it to any other kind of stock. 6. I

would advise all sheep men to grow it. I have a piece that will cut six or seven tons to the acre now that is green and it will grow much larger, and sheep like it and fatten fast on it. It would do well to sow it in June to turn lambs on it in November when there is no other green feed. I sowed mine May 1, to be cut in August. It makes just such feed as cabbage, etc.

FOR LAMBS IT IS GREAT.

In my estimation there is nothing equal to it. I have grown it for several seasons, for the purpose of cutting and feeding it to a few sheep which were being prepared for the show ring. I usually sow the seed as early as May 10, in drills 30 inches apart, and cultivate two or three times when the plants are well up. I have broadcasted it in April, with clover and Timothy, for pasture, but have not had good luck in sowing as late as July. I would advise sowing it in May for pasture for lambs when taken from their dams, and think there is nothing equal to it for fattening the young sheep. I have fed but little to other stock; cows do not care for it at first, but will soon learn to eat it. English rape grows very fast, and yields a large amount of green feed to the acre, and can be cut and fed in the barn or grazed. It can be sown early or as late as July, unless the weather is dry. If very dry, the seeds do not grow, and for this reason I have not had good luck with it when sown late. (1) I think the time is not far distant when every sheep owner will sow more or less rape for pasture for lambs through August, September and October. (2) Breeding stock would be likely to get too fat if given all they would eat, but for lambs it is splendid.

Fargo, N. Y.

ENGLISH METHODS FOR ENGLISH MUTTON.

1. It is a profitable crop for me, principally because it gives me an abundant supply of succulent food at a time in the fall when, owing to my having 200 to 300 imported sheep on hand, besides my breeding flock, pastures are short and I am in want of food. I find that I can get as much feed from one acre of rape during the two months from September 1 to November as from three acres of pasture. 2. It can be sown as late as July 20, as it will grow and be fit for sheep feed in six weeks, and it can be sown after any other crop, as rye, wheat, or even early oats, but I usually find it best to put it upon clover sod. I plow the sod in May and cultivate it thoroughly until some time from June 25 to July 5, when I have it in fine tilth, and then I sow the rape broadcast, using about five pounds of the Dwarf Essex seed per acre. It is customary to sow it after other crops in drills, three feet apart, but, by having the ground well prepared, I have been able to grow a larger and more satisfactory average by sowing broadcast (3) Six weeks from the time of sowing it will stand three feet high, and be so thick that the sheep will not go into it except as they eat into it. 3. Yes, and the only precaution in this respect is that the sheep should not be hungry when they are turned upon it, as they are very fond of it, and, should the rape be a little wet, they are as liable to bloat as when they are turned upon wet, green clover, but no more so. I turn

(1) Sow deeper in dry weather.—Ed.

(2) We have fed it, standing, up to December 7th.—Ed.

(3) It is waste of labour to drill it.—Ed.

them on after they have had their fill of some other kind of feed and when the rape is dry, and then I keep them on it continually until it is eaten down. I usually have about ten acres of clover and five of rape, either in the same or adjoining fields, so that they can run upon both at the same time. They will eat the clover for a time, and then the rape, I have never heard the question raised, but my experience has been that they will do better if they have clover and rape at the same time. I find it a good crop for ewes during the breeding season in the fall, and have rarely had a ewe fail to breed when pastured upon it then, and they will gain rapidly in flesh. It is an especially desirable crop for starting fattening sheep in the fall. 4. Yes, I feed it to the show sheep in the barns as a green crop, the same as I do oats, peas and other green crops, and I have found it very satisfactory. The English grow it extensively for this purpose. The sheep are very fond of it and gain flesh rapidly when fed on it. I have never fed it to any other kind of live stock, and I doubt if there is anything else that would care for it. This also answers the fifth question. 6. Men who can make a success of raising sheep will do well to raise each year a few acres of rape, and men who are not willing to grow these extra green crops for feed for their sheep, and to have the fuss and bother which rape, roots, etc., entail, will never make a success in any but the smallest way in raising any of the English mutton breeds of sheep. It is on just such crops as these that these sheep have been brought to perfection in their native country, and, if we expect to hold them up here, we will do well to follow closely the English method. (1) Rape is a crop that is as easily raised as buckwheat, and is equally good for cleaning lands of foul stuff. There is no danger of any bad effects from raising it, as it will not seed the second time if the Dwarf Essex seed is used. Five acres of rape and five of ordinary clover pasture will keep 100 Shropshire sheep for 60 days.

Paw Paw, Mich.

GEO. E. BRECK.

THREE HUNDRED LAMBS SIX WEEKS ON EIGHT ACRES.

1. I believe rape is so far as profitable a crop as any I have raised. 2. Here in western New-York some sow it after other crops; they cut their clover as early as possible—the last of June—and fit the ground as soon as they can. Others sow it after early peas that have been picked for canning. I have put the crop on ground used for it alone. I believe it should be sown about June 20 in this section, though some sow as late as July 15. 3. Yes. 4. I have never tried feeding it to sheep green in the barn and don't believe that is the proper way to feed it. I have never used any except to fill my silos and it is the cheapest feed I know of fed as onsilago in the barn. 5. I have tried it only for sheep and lambs. 6. I think that would depend on what a sheep man is feeding for. If for fattening, I should say, yes. My experience with rape is limited. Last fall I put 300 lambs bought in Buffalo, about the middle of September, on eight acres of rape and it lasted them about six weeks and they gained nicely, and I was well satisfied with the experiment. They were nearly ready for market when put in the barn. I could have put them in the same condition by feeding some grain

(1) Bravo!—Ed.

in the field. A good deal of care should be taken in getting sheep or lambs on rape, for there is great danger of their bloating, especially in wet weather or during heavy dews in the mornings. There is a great difference in the seed; there is one kind that is nothing but Bird rape, that goes to seed in a short time and makes very little feed. The Dwarf Essex I believe to be the best when it can be obtained. I buy mine in Canada. It is cheap as only about four pounds are required to the acre when sown broadcast and about two pounds sown in drills, which I believe is the proper way to sow it.

Batavia, N. Y. (1)

JOHN E. YOUNG.

NOT LATER THAN AUGUST 1.

1 It has proved very profitable thus far, especially during seasons of drought, furnishing a late very nutritious fall pasture for lambs after they have been weaned and for ewes that are thin in flesh. 2. It is best grown the second crop from a clover sod, and can well follow the next year either corn, oats, peas or barley. To insure a good crop it should germinate quickly after being sown; the soil should therefore be made both rich and fine by thorough tillage, and about six pounds to the acre of seed be broadcasted and harrowed once after it has been sown. The sowing in drills and cultivating afterward I consider wholly unnecessary and a waste of time. One year with another, I think that about August 1 is as late as it can be sown with any degree of certainty of producing a crop; and May 20 is about as early as it can be sown here in western New-York. 3. Yes; but it is better to allow the flock to have access to grass pasture also. The better way at first is to turn the flock on the rape when they are not hungry, as from their love for it too much may be eaten and bloating follow. Turn them on when it is about one foot high, and at first only an hour each day for two or three days, when they can be safely allowed to eat all they want of it; but as sheep love variety of food and do far better when it is furnished, they should not be compelled to subsist wholly on it. 4. I have never fed it in that way; but I consider it practicable to do so, and that it is fully equal to any other green food for that purpose. 5. Only in a small way to cows. They relish it, but I hardly think it practical to feed it to milk cows. Like the turnip, I think the milk would taste of the rape. 6. Yes; but be sure to sow the Dwarf Essex seed, and not the German or Bird rape, as it is nearly worthless for feed and difficult to get out of the soil, as it will soon ripen and the seed will remain in the soil. The Essex will not seed in this country. As far as my experience goes, there is no other green food that will grow and fatten lambs as fast as rape. Any soil that will grow corn and flat turnips will produce it. The richer it is the larger the growth of the rape.

(R.-N. Yorker.) C. D. SMEAD

HARDINESS OF DORSET SHEEP.

LOTS OF GOOD QUALITIES.

In THE RURAL NEW-YORKER of July 1, page 455, I notice an inquiry from "Subscriber," Gasville, Ohio, as to the best breed of sheep to use for crossing upon common ewes for early

(1) We do not agree with this.—Ed.

maturing lambs, to which the reply was made that the Shropshire would be better than the Dorset Horn, unless he had warm and comfortable barns.

Now I have bred nearly all the English breeds upon common ewes, and have followed this for a good many years, and for early-maturing lambs (that is, winter lambs, as I understand the term) there is no comparison between the Dorset Horn and Shropshire. The Dorset ram will get 50 per cent more very early lambs than the Shropshire, and with 100 ewes will get from 10 to 20 per cent more lambs any way. And further, the cross-bred Dorset lamb will come much stronger, thrive faster and "get there" quicker by far than the Shropshire cross.

The Dorset is a native of the extreme south of England, and does not seem to be affected by our hot summer weather, as are all other English breeds. I have seen the thermometer 90 degrees or more, and all the black-faced rams lay panting in the shade, while the Dorset rams were as active as though it was October. As I have said before—I think in THE R. N.-Y.—we put, in 1890, with each flock of 126 common ewes a Dorset, Shropshire and Hampshire ram, all of about the same age and vigor, and all thoroughbred. They were put with the ewes the last of May, and the flocks were turned into good pasture, but where they could have no care save a weekly salting; out of the first 62 lambs dropped only three had black faces, and of the whole get much more than half—nearly three-fourths—were of the Dorset cross, and considerably more than three-fourths of the twins showed Dorset blood. As to hardiness, the Dorset is not in any particular behind the Shropshire. In England the Dorsets run in very much larger flocks than the Shropshires, and are never housed or penned, while the Shropshires get more than three times the attention.

I do not wish to advocate the keeping of sheep without care. I would advise every one intending to raise early lambs to provide "warm and comfortable barns for the lambs," or keep out of the business. No lamb ever did its best or got to a \$12 or \$16 market, fattened in the shade of a wire fence in our Northern winter. No, no! Provide good quarters, or leave the business to those who will do so.

If "Subscriber" wishes lambs for fattening when coming a year old, then I would advise neither the Dorset nor Shropshire cross, but by all means the Hampshire as a sire. If he will carefully study the reports of fat stock shows or the English market reports, he will see that cross-breeds with Hampshire blood always "get there" at a year old or less. Of course, the Hampshires are larger sheep than either the Dorsets or Shropshires, and are great for early maturity. This may be the result of the way in which the Hampshires have long been bred. Unlike any other breed, more than 99 per cent of all the rams used on the flocks of this breed in England are lambs. It is hard to find a ram one year old or over unless kept for the show ring. When in England, I saw many men in both Hants and Wilts Counties who made ram raising a specialty. In each of several flocks I saw more than half a thousand ram lambs which were receiving extra care to fit them for the annual ram sale to be held in August or September, and before March following nearly all would have been used in the flocks and sent to the shambles for mutton.

One of the very desirable things in a flock of cross-bred lambs for winter feeding is their uniformity, both in size and appearance. In this respect those of the Hampshire cross will far excel the Shropshires. They will be uniformly larger and more symmetrical, and their legs and faces will be much blacker and more evenly colored. Another great point in the Hampshires' favor is the fact of their having heads very different in shape from those of the Shropshire descent, while their heads are long and graced with big Roman noses that are not nearly so thick between the eyes, and consequently do not so endanger the ewes in lambing as do the Shropshires, whose heads are a medium between those of their parents, the Hampshire and South Down (1) With good March-dropped cross-bred Hampshire-Morino lambs, well cared for and fed, there is no trouble in putting them into market the year following, when a year old, at an average of 120 pounds with the wool off and they may be made to do much better.

J. S. WOODWARD

SHEEP HUSBANDRY.

[Read before the last meeting of the Dominion Sheep Breeder's Association, by Henry Arkell, Teeswater, Ont.]

The principles upon which the breeding and general management of sheep should be conducted are subject to such modifications as are necessary to the peculiarities of soil and climate, and other surroundings. In the long run the best results are obtained by breeding sheep really good of their kind, whatever that kind may be.

I purpose to touch upon what I conceive to be some of the weak points in the management of sheep in this country, both by the ordinary farmer, and also the breeder of pure-bred stock. By the ordinary farmer, sheep are treated a good deal like what is termed in husbandry a "catch crop"; instead of being provided for under a regular system of management, no particular provision is made to insure their producing the largest amount of wool and mutton within a given time, which would make them render to their owner the largest amount of profit, and also show the excellency of the breed or flock, and the owner's skill in the management of same.

If the farmer would give even as much attention to his sheep as he does to the ordinary rotation of his field crops, and as carefully select his sires as he does his seed grain, I am safe in saying he would be able to keep four times as many sheep on his farm as he does now, with a corresponding profit, without diminishing the amount of other stock on the farm. For instance, when summer comes, instead of turning his sheep on the highways, as many do, or into the pasture fields and have his wife complaining that "those sheep are eating all the grass from the cows," I would suggest that he sow the land intended for turnips with fall rye, and by the middle of May he will have the very best feed ever found for ewes and lambs; and after his rye is finished, which should be before it comes out in head, or in time to put in his turnips, a patch of oats and tares should be ready, which may be sown on the summerfallow, if he does summerfallow—if not, on land set apart for the purpose—followed again by tares sown at intervals of two

weeks apart till his clover is fit for feeding to the lambs, which should be weaned by the first of August, when the ewes can run the stubble field. After the clover, rape should be provided for the lambs, which should be finished by the middle of November, and the lambs be fed with white turnips or swedes, as the case may be, with a little grain.

In feeding the above-mentioned crops I have no doubt the question will be asked. How will you do it? Answer.—Use a portable fence, a portion of which is so constructed as to allow the lambs to have access to the portion of the field where the ewes are to be fed on the morrow, where they can be fed a little grain if desirable; this, of course, is optional.

Give your sheep each day what they will eat after the rye is finished, and as the weather gets hot provide a field where they can run, having access to water and shade through the heat of the day, say from ten o'clock in the morning till four o'clock in the afternoon, when they return to their allowance of tares, oats, etc. By this means your land is regularly manured instead of the fence corners or the highways, and your sheep will be healthier and grow more wool of a better quality, and your lambs will take well to their winter food on coming into the yard, if you keep them for fattening. A very small quantity of land will, under this system, keep twenty or thirty ewes and lambs through the summer and not interfere with your other stock, besides leaving on the land the manure, worth at least ten cents per week per ewe and lamb. The food consumed will by this plan be grown on land that otherwise would have lain idle for a great portion of the summer.

If farmers will only take pains to save well their pea straw, this, with a few turnips, will winter ewes well until lambing season approaches, when good clover hay will be required. Much has been said about giving water to sheep in winter. My experience of thirty years in Canada is that sheep do not require water when fed a sufficient quantity of turnips, viz., from seven to eight pounds daily in two feeds for a ewe in lamb. Feed young sheep nearly all they will eat, with salt always before them. Keep them in a suitable building provided with a yard to feed in, divided off according to age and size. Place them where they cannot be molested by other stock.

As intimated in the beginning of this paper, I wish to notice what to me seems the weak points in the breeding and management of our established breeds of sheep.

The first which presents itself to my mind is the want of uniformity in the flock; this is great weakness and drawback to our success as breeders, and the question arises, why does this exist? First, I think from want of more careful and judicious selection of sires, for, as one of your members has stated in a former paper, "the sire is half the flock." I have said careful and judicious selection of sires, for it is a pretty well-known fact that as a general rule the first cross between an inferior and superior animal is very successful, producing, in many instances, animals equal to the improved breeds used; but the judgment and skill of the breeder is called forth in raising the standard of his pure-bred flock. This has been done, and what has been done can be repeated, but it requires great care and shrewd judgment to bring about the desired results. One reason why failure in this direction is often experienced is, I

(1) With a cross of the native sheep.—Ed.

think, in introducing a sire into the whole flock, without first testing his suitability, by using him on a few ewes selected with great care, the breeder having in his mind a well-defined ideal of the proper type to be established in his flock. Continued perseverance on these lines will be a great factor towards bringing about that uniformity of character so much to be desired. The second point I notice is a lack of sufficient weeding out of the flock all animals which do not come up to the proper standard of the breed; also all young and breeding animals are not sufficiently induced to lie out of doors by providing for them sheltered, well littered, roomy yards, where they can lie down through the day—in fact, you will find many that will prefer lying outside during the night, except in stormy weather. This I consider very conducive to the raising of vigorous, healthy stock, and the development of robustness of constitution, which, combined with large growth of fleece and aptitude to fatten, symmetry and fecundity, should be the flockmaster's aim and ideal. Tups of this class and character will find a ready sale anywhere, and the breeder will find he cannot afford to breed or sell poor specimens of his breed. Carefully bred stock will bring millions of money into the pockets of the farmers of this country, and furnish healthy, delightful and profitable employment for the young farmer who now seeks employment in towns and cities.

The third weak point I wish to name is breeding from excessively fat animals, which have been got up for exhibition purposes. If you will exhibit,—and I suppose someone must exhibit to keep the different breeds before the public,—I unhesitatingly say sell such animals and not breed from them to the injury of your flock, producing, as they do in many instances, a lot of poor, weakly, scrubby lambs, and these are bred from simply because they are pure-bred. In place of this let the breeder select the quantum of ewe lambs for his own use, and set them aside, and let no price tempt him to dispose of them, when in a few years the whole of his flock will be uniform and the best. This line of management being persevered in, there will be no necessity of running home to the Old Country to import either ewes or rams, except as an occasional change. The time has come when I think the sheep breeders of this country should set to work in earnest to breed sheep of such a type, and of such excellency of form and character, that they can, not only supply the whole farming community, but each other, with such different breeds of sheep as may be required. We have a country and climate well adapted to sheep raising, and thousands of acres of land which to-day would be vastly more remunerative to the owners if turned into sheep farms and conducted somewhat on the lines here laid down, instead of being rooted over with the plow in a vain attempt to grow wheat at a profit. In conclusion, let me say, gentlemen, breeders, farmers, try to introduce into sheep husbandry better management, better sheep, and more of them. (1)

SUFFOLK SHEEP IN THEIR LAND AND OURS.

GEORGE W. FRINKLIN, IOWA.

The Suffolk sheep, like many other good mutton sheep of the present day, are the result of a series of cross breed-

(1) This is worth every attention from all Canadian farmers.—Ed.

ing. The breed originated among the farmers of Suffolk, England, by the use of the old Norfolk ewe and the Southdown ram. The Southdown sheep is so well known that it is not necessary to dwell on its conformation, quality of wool and mutton, constitutional vigor and soundness. The old Norfolk, however, is less known, being now almost extinct. It was large, long bodied, black faced, black legged and hardy. (1) The flesh was known for its fine grain, good flavor, and large quantity in proportion to live weight.

From the year 1800 to 1850 the interbreeding of the Southdown and the Norfolk was quite general. In 1859 these Southdown-Norfolks were first called "Suffolks," classes being given to them by the Suffolk Agricultural Association. The Suffolk sheep, as they now exist, may be briefly described as black faced, hornless, with clean, black legs, about thirty per cent. larger than the Southdowns, which they resemble in character of wool. Among the excellent points of this breed are: Fecundity—Thirty lambs to twenty ewes being a very frequent occurrence in large flocks. In the flock of the writer, this spring, are one hundred and sixty per cent. of

In size they are next larger than the Shropshire, with wool a little coarser than that of the Southdown. A gentleman from the State of New York imported a ram lamb nine months old, which weighed one hundred and ninety-five pounds when taken off the vessel, a yearling ewe weighing two hundred pounds (not in show condition), and this same gentleman reports a lamb seven weeks old weighed eighty-five pounds. I had one yearling ewe, in stock condition, at the Annual State Shearing in Iowa, which weighed, after being shorn, one hundred and eighty-eight pounds. The same sheep, in the scoring contest, took the first premium on a score of ninety-six and one-half points. She measured forty-seven and one-half inches around the heart girth, and was thirty-five inches from withers to root of tail. In this breed will always be noticed the same color of the face and legs—that of inky blackness. Never will a gray, a brown, or a speckled face be seen.

Some years since the Germans learned the value of this breed, and were the sole importers till quite recently, when they were brought to the notice of American breeders. So

a reliable guarantee to purchasers, by maintaining and publishing a register of pure-bred Suffolk sheep. The Iowa Suffolk Sheep Company has imported a flock of this breed, which are kept at present on Orchard Hill Farm, Iowa, under the management of its secretary. [Some of the highest-bred animals of this flock are seen in our illustration, engraved from photographs]

The Dairy.

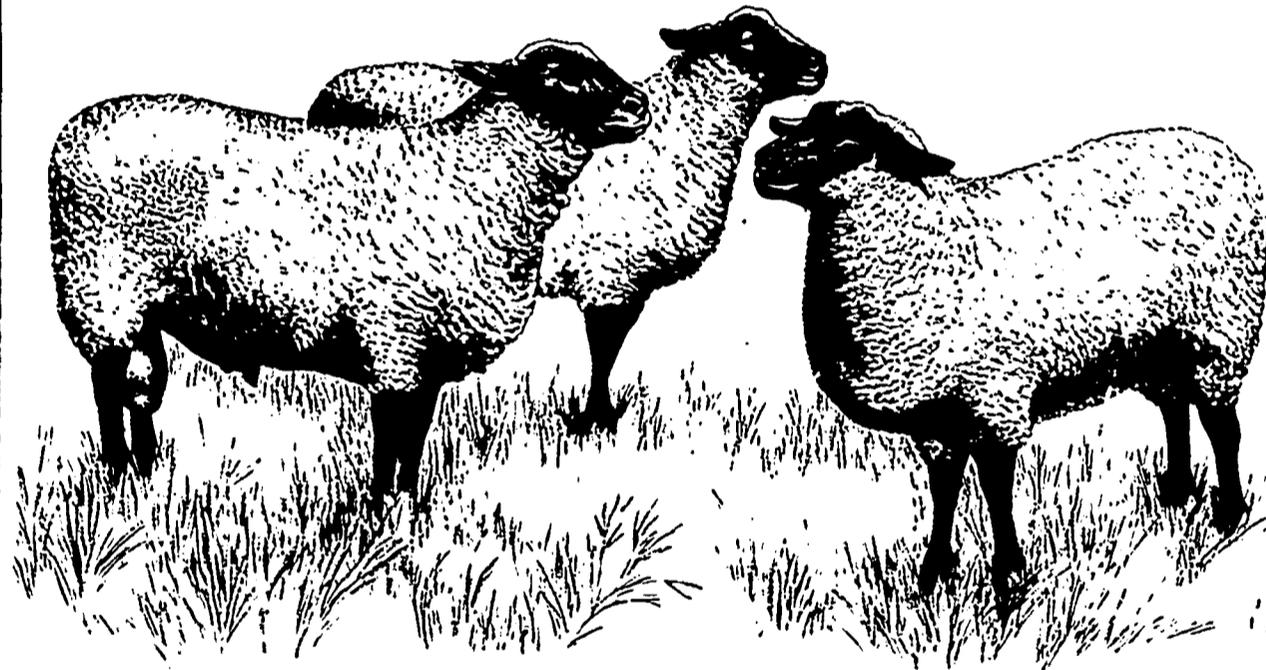
LECTURE BY M J DAMIEN LECLAIR.

Superintendent of the Experiment Station and School at St. Hyacinthe.

BUTTER-MAKING.

Mr. President and Gentlemen,

The art of butter making is governed by a series of rules and principles that, in their application require a great deal of tact, of experience and



HIGH-BRED SUFFOLK SHEEP.

live lambs to the number of dams. Early Maturity - They are noted for this even to as great extent as the famed Hampshire. One pair of lambs dropped this spring, at this writing—May 9th—weigh an aggregate of one hundred and eighty-two pounds; another lamb, now two months old, weighs eighty-four pounds, the youngest lamb, now thirty-five days old, weighs forty-eight pounds. In England, nineteen out of twenty breeders prefer a tup lamb as a breeder to an older sheep. Hardihood—They will get a living where other sheep will fail to thrive. I have noticed them staying in the pasture during storms which drove other breeds kept on the same farm to shelter. Mutton—The quality is of the finest, with an exceptionally large proportion of lean meat, and commands ready sale, at top prices. Constitution—Their robust, hardy character, power of endurance, and comparative freedom from foot-rot have, during the past fifteen years, caused them to displace, to a great extent, the half-breed sheep formerly in favor on the marsh land of England.

(1) With horns.—Ed.

far as known, the first importation of this breed was made in 1888. Other importations have followed, and the importers of them have not been disappointed in what they first saw in this breed for America. The one thing that seems strange is that it did not find its way to this country sooner. They are quite plentiful in the eastern part of England, and are beautiful animals, with large, rangy bodies, and very quick to mature.

One of the distinguishing features of the Suffolk sheep is the head, upon which there is rarely any wool. Long, graceful, clean, and coal black, with long, black ears, it imports a strong individuality to the sheep. I have Suffolk and Cotswold sheep on the same farm, and visitors admire the Suffolks most. They are great milkers, and are very hardy. The venison-like flavor of the mutton recommends it to connoisseurs, and the absence of excessive fat insures a growing preference on the part of consumers.

The American Suffolk Flock Registry Association was established in the early part of the present year, incorporated under the laws of the State of Iowa, for the purpose of promoting the purity of the breed and providing

of judgment. It is easy enough to make butter, but to make it always of superior quality, to give it invariably the same taste, the same aroma, is an art.

If the milk always reached the maker in the same condition, if he had only to deal with fresh milk, just drawn from the cow, I should lay down the following rule as invariable: Cool your cream, on leaving the separator, down to 45°, churn after 24 hours, at a temperature varying from 56° to 60°, according to the time of year; have a good thermometer, and you will be a perfect butter-maker.

But, as the heat, the cold, the humidity, varying from day to day, produce changes in the milk, it follows that the treatment of the cream must be varied too, and that it would, therefore, be useless to seek for fixed rules for the making of butter. And I have, for a long time, relegated my thermometer into a secondary position, preferring to place more dependence on taste and scent. These two senses, well employed, are excellent guides, and are, besides, the only ones the maker has to depend upon in ascertaining the degree of ripeness of his cream.

Indeed, it is only by tasting that I can follow the working of my cream, and this working must be followed if we want to control it. For, a good maker must thoroughly understand his cream, as a baker understands his dough, a blacksmith his iron. At one time, the development of acidity wants encouragement, at another it needs checking, or it must even be quite stopped, that, at churning time, the cream may have attained the desired degree of maturity.

Experience teaches us that if the milk has suffered from cold, the cream must be warmed higher; if, on the other hand, the milk has got a little acid from too high a temperature, the cream must be cooled in proportion.

The grand secret in butter-making is to find just the proper point of maturity for the cream, to get it always, and never to exceed it. If there is a rock to be avoided, it is not to make the cream too sour, for the butter takes and keeps the flavour of the cream whence it comes. I will go further, and say that the butter takes and keeps the flavour of the ferment the maker adds to his cream. Watch, therefore, your ferment; if it turn bad, make another. Anyhow, it is as well to make it fresh every week.

If, at churning, your cream was very ripe, the separation of the butter proceeds easily, the buttermilk adheres less to the grains, and the washing is easy. Very little water is needed to wash butter; too much carries off the aroma.

In cold weather, take care that this water have the chill taken off, to prevent hardening the butter, for butter when too hard, spreads into too thin layers under the worker, crumbles and becomes greasy. There, Gentlemen, this is what I have to add to the essay I had the honour to submit to your association in 1889.

DISCUSSION.

M. Chapais.—Would M. Leclair explain, for the benefit of some persons who probably may not know, what is this ferment he speaks of.

M. Leclair.—There are two methods of making butter; one, when the cream is allowed to actify itself; and the other when a ferment is used to actify it.

M. Chapais.—What I ask you is, to explain what the ferment used is.

M. Leclair.—It is either buttermilk which, as you know, is always sour; or skimmilk, which has previously curdled or been made sour, and is placed in the fresh cream as soon as it is gathered.

Mr. Barnard.—And you keep it in the fresh cream for a certain number of hours, don't you?

M. Leclair.—Yes, according to the time that intervenes between skimming and churning.

Mr. Barnard.—Which time varies according to the temperature?

M. Leclair.—Certainly.

M. Taché.—What proportion of ferment do you add to ordinary cream?

M. Leclair.—It is difficult to say precisely; for it depends upon the temperature at the time the ferment is added.

M. Taché.—But what proportion do you use? Ten, fifteen, or twenty per cent?

M. Leclair.—I cannot tell you the proportion exactly; but, with a little experience, one soon gets to know the proportion required.

M. Taché.—Is it five per cent?

M. Leclair.—I cannot tell you; it depends upon too many conditions: quality and strength of the ferment, state of the cream, &c. &c.

Mr. Barnard.—Does not the nature of your ferment alter, from day to day, as it gets older.

M. Leclair.—It changes a good deal.

Mr. Barnard.—It becomes stronger with age, and less is required, does it not?

M. Leclair.—Not only does it grow stronger, but it acquires a bad taste, which it would communicate to the butter. That is the reason I advise that it be changed once a week.

Mr. Barnard.—If I understand, the object of using the ferment is to produce a fermentative action in the cream, and this action produces the result sought for. In all these fermentations, there are germs, and these develop themselves and multiply. Consequently, the more numerous the germs, the more active they are, and the more power they exert. It is a very recondite question, this of ferments. M. Nagant, who is present, has made a special study of them. He is a distinguished chemist, who has been several years in Canada, and interests himself greatly in agricultural chemistry. If you desire information on this point, I believe M. Nagant is going to treat the question.

M. Paquette.—Will you tell me, M. Leclair, if it is better in a creamery to keep the cream in the pans or in a vat.

M. Leclair.—For my part, I prefer keeping all the cream in the same vessel: because, in this one vessel the cream all ripens more equally, than it would if kept in several vessels.

M. Paquette.—Have you ever tried putting ice in the cream?

M. Leclair.—I never encourage that plan, but have always opposed it as much as possible.

M. Paquette.—Does it not colour the butter too much?

M. Leclair.—I think ice put on the butter might change its colour; but I do not think that putting it into the cream would alter the colour of the butter. This is only my opinion; I have never tried it, so I cannot advance any proofs that I am right.

Mr. Barnard.—You know, perhaps, that there is butter made without any fermentation, or, at least, any apparent fermentation. The Normandy butters, for instance, that are made with perfectly fresh cream, without salt, for the English market, are not made after your principle. Is not this so?

M. Leclair.—No; our method is with ripe cream. Aiming at having our cream ripe, we assure ourselves of the quantity of acidity we need to produce a proper degree of ripeness.

Mr. Barnard.—There is still another process, which is less employed in Canada, on account of the market, and which consists of making butter with unfermented cream?

M. Leclair.—There is.

Mr. Barnard.—There are machines that extract the butter directly from the warm milk. The milk is taken, separated in the centrifuge, placed in another vessel that produces the same result as the separator, and, in two minutes more than is taken to get the cream, butter is made. On the European market, or even in the American market (for there are to-day, in the States, many tourists, and the rich, educated classes have acquired European tastes), these butters made from sweet cream are those that fetch the higher prices.

This is why I thought it a *propos* to draw your attention to the fact that there are two kinds of butter: the one made from cream ripened by fermentation or acidulation, and the other from sweet cream, extracted from warm new milk.

M. Paquette.—Is it better for the pans that hold the cream to be wide or narrow?

M. Leclair.—Provided you have all the arrangements required to control your cream, I think it makes very little difference whether your pans be wide and shallow or deep and narrow.

M. Paquette.—You think there is no difference?

M. Leclair.—If you can perfectly control the ripening of your cream, it can make no difference.

M. Paquette.—Can it not be more easily controlled in a wider vessel? It strikes me that a crock with plenty of surface would be superior to one of narrower dimension.

M. Leclair.—I think you are right, for many authors say that it is the absorption of the oxygen of the air that determines the aroma. Modern authors in general, however, do not seem to hold with this. Still, if it were the case, it is certain that a larger surface would better encourage the absorption of oxygen. If there be an exception to the use of wide, shallow pans, it is that it would be more difficult to control in them the ripening of the cream, for the precise reason that there is in them a more extensive contact with the air; and this trouble would be much more perceptible in the great heats of summer.

Mr. Barnard.—Besides, more cream would harden at the surface.

M. Leclair.—Just so.

Mr. Barnard.—Whilst in deep crocks, you stir it; and in your method stirring is very necessary.

M. Leclair.—Yes, that it may ripen equally all over, and that no froth or foam-producing lumps, may rest upon it. Cream, when it leaves the separator, always brings with it lots of froth or "brou" (*patois*), which must absolutely be wasted, because that part of the cream never works in the same way as the rest.

M. F. X. Thibault.—Can you give us any means of knowing when the cream is fit? It is very difficult, particularly if you do not use the thermometer as you said in your address.

M. Leclair.—I think experience alone can teach you that.

Mr. Barnard.—Are we to understand that you do not use the thermometer, or only that you assign it a position of secondary importance?

M. Leclair.—I assign it a secondary position.

M. Thibault.—If I understand you, you hold that the thermometer has nothing at all to do with ascertaining the degree of ripeness of the cream. Its only use is to indicate the temperature. It has nothing to do with the judging of the state of the cream, with the determination of the most favorable moment for churning.

M. Leclair.—You are right. This is how I use the thermometer: as soon as the cream is gathered, it is as well to see what its temperature is; and in proportion as the milk was more or less warm, the temperature to be given to the cream will vary. And this is how the thermometer may help you in the determination of the ascertained degree that you have decided as being the best to ripen your cream by the time you intend to churn. But, of course, the thermometer cannot possibly be of the least use in telling you whether the cream is ripe enough, acid enough—certainly it cannot.

M. Paquette.—Is there much difference in the yield of the milk if it is left in the pans?

M. Leclair.—This is a thing I have had no experience in.

M. Lalonde.—Would you tell us to what causes you attribute the *white stripes* in butter?

M. Leclair.—They may depend upon the careless washing of the butter, or they may come from allowing the cream to harden. It may be, that the butter was badly worked, and that parts of the cream remain unconverted into butter; or, sometimes, from small lumps of curd that get into the butter. It is recommended to stir the cream vigorously till these lumps disappear. It is precisely because these bits are subject to remain unbroken, that you find them again in your butter after salting. Generally, when this depends solely on careless washing, it will disappear in time; but the butter is injured by this little quantity of buttermilk that has remained too long in it.

M. Saul Côté.—If I may be allowed, I will return to the subject of ferments. Do you not think that it would be better to have a fresher ferment, even if you had to use more? In making butter, there are two results sought for: first the flavour, and, next, the greatest possible yield. If the ferment used is stale enough to ripen the cream, but at the same time gives a bad taste to the butter, the result is not satisfactory. Wherefore, I hold that it would be better to have a fresher ferment, and to use a greater percentage of it. The older the ferment is, the worse the flavour it would give: is it not so?

M. Leclair.—Decidedly so.

M. Saul Côté.—Then, I think we might put as much as 4 o/o or 5 o/o of ferment, and that in a fresher state.

M. Leclair.—Yes, the weaker it is, the more is needed. But, again, the ferment must be of good quality; for it is certain that the taste of the ferment is imparted to the butter.

M. Saul Côté.—Do you think, Mr. Leclair, that butter made after this fashion, i. e., with ferment, is as good as butter made with cream 48 hours old.

M. Leclair.—After an experiment I made last summer, my opinion, after having arrived at a definite result, and after having only tested the difference of flavour between the two butters immediately after churning, my opinion, I say, is, that the butter made from cream with the ferment is superior to the other.

M. Côté.—Without reckoning the advantages of the dairy not needing to be so large; as the cream-vats not be so numerous.

M. Leclair.—Yes; that may be in its favour.

Mr. Barnard.—Have you investigated the keeping quality of butter made with ferment? Can you state positively that butters made after this method of yours will keep longer than other butters, made with cream that has not been fermented at all, or *vice-versa*?

M. Leclair.—I made butter, last summer, with fermented cream, and with cream self-ripened, but not with sweet cream. I requested a Montreal dealer, Mr. Langlois, who is deeply interested in your society, to keep these two butters apart, to see during the winter how both behaved. After examining the two kinds of butter, M. Langlois and I decided that the butter made with the fermented cream was in a rather better condition than the other.

Mr. Barnard.—The question of butter from sweet cream may be left to the St-Hyacinthe dairy school. It is asserted by some that the germ in the ferment is not likely to improve anything to which it may be added. The flavour it gives may be agreeable to the taste at first, but this flavour will get stronger daily, weekly, and when

your butter reaches the foreign market, it will be bad when you fancied you had made superior butter. But this is another question I will leave to Mr. Nagant, who, I believe, has made a special study of it.

M. Nagant—I think that the theory of ripening cream by the aid of a ferment may have both friends and enemies. If the ferment's action could be kept under control, the results might be satisfactory, though Mr. Barnard was quite right when he stated that fermentation is a kind of decomposition. Still, in studying the fermentation that takes place in cream in producing in consequence ferments like those used by Mr. Leclair, it has been discovered that some of them impart a good flavour to the cream, but that it is necessary to isolate others that are able to impart a bad flavour to the cream, and in a very short time cause it to become putrid. Now, in the ferment prepared by allowing the cream to ripen when exposed to the air, good ferments may be produced, but it is also possible that a hundred time more bad ones may result from the practice. So that, in employing it, for ripening the cream, the cream is impregnated with *microbes of unknown kinds, and one is never sure of the results that will be obtained.*

Certain bacteriologists in Germany and Denmark say that they have succeeded in isolating the ferment or ferments which ensure to the cream both uniformity and the desired quality. Among others, M. W. Storch and H. Weigmann have succeeded in preparing ferments that are now used in certain creameries. This ferment is composed of microbes all of the same species; so that, if a little of this ferment is introduced into the cream, the fermentation obtained is always alike. Thus, uniform products ensue.

There are, too, nowadays, men who make a business of isolating such ferments as are thought to impart a good flavour to cream; but the commonly followed process at present, one that will probably last a long time, is to take a ferment prepared from ripe cream: this is wrong; for if the cream to be churned is thus impregnated with useful ferments, injurious ones also find their way into it.

M. Taché.—Before the subject is closed, I will add a word. It has often happened, during the existence of the Dairy-men's Association, that persons reading our reports with a desire to get the greatest amount of good from them, have taken what they find in them too literally. A crowd of novel subjects are discussed before the meetings, not so much to persuade those to whom they are submitted, to change their methods of working all at once, but for the purpose of drawing their particular attention to changes that may possibly supervene. If, for instance, a maker, who hears us talking about making butter from sweet cream instead of ripened cream, take this literally, because he hears the lecturer say that he makes his butter from sweet cream and if he, from hearing this, change his whole system of butter-making, this is the result he exposes himself to: shopkeepers have customers whose known tastes they consult when they are making their purchases; now, these customers would very likely refuse any novelty. If you want to retain the custom of those, in fact, of all the consumers of the goods you make, you must give them the article they like. Hence, as M. Gigault said just now, after Mathieu de Dombales: "we must always, when working, keep one eye on the

market." When, then, you observe some novelty in the dairy business, you must not change your old methods of working all at once. Should you believe that your method is the better one, continue to follow it; but if you intend to make a change, consult the inspector or the managers of the dairy-school; consult them before you make the slightest change, for, if you have obtained good results with your usual practice, you would be very wrong indeed to forsake it for any other that you know nothing about.

It is within my knowledge that cheese makers have completely risked the quality of two or three months' manufacture, after the visit of an inspector, simply because they changed their mode of working all at once. This should not be done. The makers should begin by trying experiments on a small scale on the methods recommended to them, and never try practically, without consideration, the advice given them, though, certainly, this was not offered them from a desire to make them lose money.

All that is said here must be carefully weighed. To return to the subject of butter making and the treatment of the cream, I may state that Mr. Robertson, after having been engaged for two or three years with the question of creameries, is now on a tour through England, where he is trying to find out the sorts of butter best suited to the different markets of that country. There are the London, the Bristol, the Gloucester, the Liverpool markets, and in these different markets, there are probably five or six different classes of consumers. Some like butter with a high flavour, others with little flavour; some like butter without salt, others with 2 o/o of salt, others, again, with 6 o/o or 7 o/o of salt. There will be a most interesting report to be made on his return; and during the winter, at the Dairy-school at St. Hyacinthe, there will be practical illustrations of Mr. Robertson's advice as to the demands of the various markets of England.

Our Montreal buyers are capital judges. They know what suits their customers. If they tell you that your butter has not enough flavour, try to give it more. If they say its flavour is too high, try to reduce it, and make use of the means that will produce these results.

Above all, be cautious; because the future of a factory may be risked by one day's bad work; and it is clear that if this bad work take place, it is not that, but many better results that were in view. Above all, be cautious.

(From the French.)

OFFICE OF THE DAIRY COMMISSIONER.

CENTRAL EXPERIMENTAL FARM.

DEPARTMENT OF AGRICULTURE,

OTTAWA, CANADA.

Notes for Cheesemakers for October.

By JAS. W. ROBERTSON,
Dairy Commissioner.

A few years ago "October cheese" of Canadian make were deservedly in bad repute in the English markets. Their soft, porous body made them liable to go off in flavour quickly;

they did not possess the keeping qualities, combined with that richness of body and flavour, which are so much desired by English merchants and consumers. During the last two or three years a decided improvement in the quality has been effected, and with the finer quality has come a better reputation in the markets. By the exercise of due care on the part of the cheese-makers throughout the remainder of this season, the reputation of our "October cheese" may be so well established that hereafter they will be counted equal to "Septembers." Cheese can be made as *firm* and *fine* during October as at any other time of the year. Suitable conveniences for controlling the temperature of the curd from the milk vat until the cheese is ripe are required.

MILK.

The milk delivered at factories during October has a higher per cent. of fat and other solids than during the summer months. Its flavour will be equally rich and nice, when the cows are stabled during the cold nights and fed liberally on fodder corn or any other suitable succulent nutritious food. Turnip tops and rape should not be fed to cows whose milk is furnished to a cheese factory. After the milk is drawn it should be strained immediately and forthwith aired as thoroughly as during the hot weather of July. The aeration will improve its flavour and prepare it for the manufacture of a finer quality of cheese than it will be possible to obtain if that treatment is neglected. The milk should not be cooled below 60° Fah. A milk house or the farm kitchen will be a more suitable place for keeping it over night than the open milk-sand when the temperature of the outside air goes below 50°.

CHEESE-MAKING.

The construction and equipment of the making rooms of some factories are still defective. At the cost of a little labour and building paper, almost any room can be made so close in its walls that the inside temperature may be regulated at will by the use of a stove or steam pipes. Thorough ventilation once every day should be secured. The following paragraphs will be of service in refreshing the experienced cheese-maker's memory and in instructing the others in the best practices.

1. Let the milk be ripened by the application of heat before the rennet is put into it. The ripening should be allowed to proceed to such a degree that not more than three hours will be required between the addition of the rennet and the development of acid perceptible to the taste or discernible by the hot iron test.

2. The use of sour whey to hasten the ripening should not be resorted to. Old milk which has become nearly sour to the taste may be added, but lopped or thick milk should never be used.

3. Rennet should be added in quantities sufficient to coagulate the curd into a state firm enough for cutting in from 45 to 35 minutes at temperature of 86° or 88° Fah. It should be diluted with water to the volume of at least one gallon of liquid for every vat.

4. After coagulation is perfect the curd should be cut finer than during the summer. The application of heat should be delayed for 15 minutes after stirring is commenced; and the temperature should be raised to 98° and maintained at that point until the whey is drawn off. After the middle

of the month a temperature of 100° will be preferable.

5. Care should be taken to so apply the heat and perform the stirring that the curd particles will be so dry before the development of acid is perceptible, that after a handful has been pressed into a lump they will separate readily.

6. The curd should be stirred before and after the removal of the whey until the whey is so well separated out of combination with its particles that they produce a squeaky sound when bruised between the teeth or otherwise.

7. After the whey is drawn off the curd should be kept at a temperature above 94°. If it becomes colder than 94° the development of acid will be hindered and excessive moisture will be retained in it during the souring process. The presence of such extra moisture in the curd at this stage will leave the cheese with a weak "pasty" or "tallowy" body, according to the degree of acid development permitted.

8. A cover over the vat or a curd sink with steam pipes seems a simple and effective provision for keeping the curd warm. Where no rack is used, the putting of a few pails of hot water in the lowered end of the vat will maintain the temperature.

9. Just after the removal of the whey, the curd should be handstirred until after the whey that will run has been drained off. After the curd is dry and firm it may be allowed to mat into one mass, but not before that condition is reached. All stirring should be performed so as to avoid wasteful bruising of the grain of the curd.

10. It may then be frequently turned and packed close, till the layers of curd are four or five deep. Whey should never be allowed to collect in small pools on it at this stage. The close packing in layers four or five deep, with frequent turning, prevents the outside of the matted pieces from becoming chilled or more deeply coloured by the action of the air than the rest of the curd.

11. The hot iron test is almost indispensable for determining with certainty, from day to day, the exact stage of acid development at which the whey should be drawn off. The filaments—thread-like processes—should be about one quarter of an inch long. The proper degree of change for the cutting and salting of the curd has taken place when it feels mellow, velvety and "slippy," and shows a texture passing from the flaky or leafy into the stringy and fibrous. If it be too moist or soft, it should be cut or ground at a rather earlier stage and hand-stirred until dry enough, before the addition of salt. The most of the hand-stirring should precede the salting.

12. Not less than 3 lbs. of salt per 1,000 lbs. of milk should be used, and when the curd is on the soft or moist side, 3½ lbs. per 1,000 lbs. of milk should be added; the 3½ lbs. rate is also preferable during the latter part of the month when cold weather prevails.

13. Immediately after the application of salt, the pieces of curd become harsh and gritty on the surface; then in from 15 to 25 minutes the harshness gives place to a mellow condition. At the second stage—and the temperature should not be under 88°—the curd should be hooped and pressure applied. Delay at this point or coldness of the curd destroys the desirable rosy flavour, and imparts to the cheese the bitter taste of the salty white whey.

14. Particular care should be taken to use only pure warm water when

turning the cheese for bandaging, before the rinds are fully formed.

15. Especially in a cold press room, pains should be taken to apply heavy pressure to the cheese before they are left for the night.

16. All cheese should be finished in symmetrical shape and kept in the hoops until the rinds are smooth and the edges free from any projecting "shoulders."

CURING THE CHEESE.

The temperature of the curing room should be kept as nearly regular at 65° degrees as possible. Where the September cheese are kept in the same room with those of October make, the latter should be kept on the warmer shelves. A slight chilling after a cheese has been curing at 65° for two weeks, does little damage; but a steady temperature and constant curing give the best results. Bitter-flavoured cheese are usually the results of chilling in either the making-room, press-room or curing room. If the cause be prevented, the consequence will be unknown.

TO FACTORY MANAGERS.

As this is the last Bulletin of NOTES FOR CHEESE-MAKERS for this season, I desire to counsel the managers of factories to guard against tendencies that appear to menace the permanent success of our cheese industry, viz:—

1. The employment of inexperienced, incompetent men to manage the inside work of the factories.

2. The conscienceless cutting down of the remuneration of the makers, until the able men are leaving the occupation.

3. The inevitably penny-wise and pound-foolish policy of using factory furnishings of poor quality, simply because they happen to be a little lower in price.

So much additional trouble, loss, worry and disappointment result from the putting of men without aptitude or experience in charge of large factories that I strongly urge the proprietors to exercise the utmost care and caution, and invariably to inform themselves as to the fitness of an applicant by enquiry from a reliable expert or cheese buyer. No factory should incur needless risk of a loss of reputation, of patronage, of prestige, of price or of profit.

Cheese-makers may obtain copies of this Bulletin free, in English and French, by application to the Dairy Commissioner, Central Experimental Farm, Ottawa.

The Horse.

HORSES CANNOT LIVE ON FREE LUNCH.

TEACHING A WALK; HEAVY FEEDING.

"Teach the big horses to walk. Teach them while they are colts. If you take them out for an hour's exercise, don't let them trot a step, however good they may feel, until they have spent at least half their exercise time in walking. This will induce a rapid walk, which will in time become a habit. It is easy to get a colt to trot after he has been walking rapidly for half an hour, but exceedingly difficult to get him to walk rapidly if he is tired of trotting," said a city team-

ster to me recently in reply to my question whether he bought fast walkers or taught them the trait.

"We have to teach it to them. Green horses from the country don't know how to walk. I can get more out of horses in my business if they keep up a sharp walk all day than if they are slow walkers breaking into a little jog occasionally. My men are taught to hold them in and keep urging them until they understand that we want a rapid and continuous walk. The horse that has learned this lesson will start away from the stable in the morning at a good pace and not get out of breath all day. My horses last longer at a walk than at a trot or change of pace. It does not knock them out to walk as it does to trot."

"Is there no choice in buying horses? If you should accept any horse offered you, would you not be in danger of getting an animal that would never learn to walk rapidly?"

"Of course a man has to use sense about buying horses as well as everything else, and there is just as much difference in the intelligence of horses as of men. A lunkhead can never be got to walk satisfactorily. I couldn't afford to owe one. Notice the difference in men about walking. Business men and thinkers walk rapidly; laborers always walk slowly."

"What do you feed your horses to keep them so round, fat and hard? I inquired. He smiled proudly as he walked from one stall to another and brought his heavy hand down upon the plump flanks of his favorites.

"They get just one thing at every meal, except for Saturday's supper, and it consists of the best Timothy hay and all the oats each will eat. Here's a 1,600 pounder that eats his 30 quarts of oats every day. Get off their feed? Bless your heart, they have too much work for that. Why, these horses work from 12 to 16 hours, and night hours besides, sometimes doing work for 20 hours out of 24. Their appearance doesn't indicate that they are very hard workers, does it now?"

"What is the variation you give them Saturday night?"

"Well, these 12 big fellows have 40 pounds of good hay, 40 pounds of bran and the same weight of middlings divided up among them. This makes a soft, cooling and nutritious mash which regulates them internally and keeps them in good order through the following week. (1) I never feed it at any other time except Saturday night, because it is slightly physiciking and weakening. The horses are not taken out on Sunday, and begin their regular oat ration on Sunday morning so that they are ready for their hard work again on Monday. The bran and middlings are not put upon wet hay in winter, as it might freeze in their manure."

"What has made you such a firm believer in heavy feeding?"

"Well, I will tell you all about it. I became convinced three years ago that there was no money made in starving horses. I see horses every day that are worth \$150, but wouldn't bring \$50 if put up at auction. Their bones stick out and they can scarcely draw a cart. Horses can't live on free lunch as I did for 20 years."

"How did you make it go?"

"I didn't make it go any better than the rest of the poor drunkards. I got so reduced that the shoes on my feet were taken to the pawn shop, and the

(1) This was exactly the plan in our stables in England—14 horses including hunters, &c., and for 11 years we never had to consult.—Ed.

looking-glass was gone from the wall. I stopped drinking when refused a bucket of coal because my credit was also gone. Now, I have not tasted the stuff for over three years. I own numerous horses, among them a better one that is in the stable here, and harnesses and carts for all, besides having money at interest. Besides all this I have a happy home, and never do a hard day's work, and never shall." HOLLISTER SAGE.

"LOST ON THE ROAD!"

Lost and never regained—horse-flesh, labor, patience and time. Those who are skilled in such matters can figure up the cash value of these things. You have lost all of them before now—they are sunk in the ruts, crushed on the bumps and lost in the dust and sand of a pretty fair road that goes at Merchantville, as most roads go, and yet we are told of it: "This load was easily hauled from Philadelphia over as smooth Telford road, and though the team has been doubled to overcome the resistance of the dirt road on which it now stands, it has been found necessary to cast off part of the load before proceeding farther. This is a frequent occurrence in this vicinity, and in other parts of the State." Doesn't that sound natural to you? If you could only measure your load by the best piece of road between your farm and the market, you could do something, but the measure must be made by the poorest piece every time. This is the story told about it: "Scene on the Camden and Burlington turnpike, showing farm teams on their way to Camden market with heavy loads of fruits and garden truck. A scene of every day occurrence. Traffic about 500 loads per day. When the first team was stopped no other team was in sight, and before the camera was adjusted (within a few minutes) there were nine in line. This enormous traffic has been attracted by the hard, smooth and permanent surface of the improved road."

A smooth road, you see, attracts traffic, saves horseflesh and time. A good illustration of this is thus given by Hon. Edward Burrough, President of the New Jersey Board of Agriculture. He says: "Before the building of the New Jersey turnpikes, 25 baskets of potatoes were considered a fair load from the farm I now occupy, to market. After the turnpike was built, 50 to 60 baskets were considered no more of a load than were the 25 a few years previous. And now, since the stone road has been built, our load is 85 or 105 baskets and during the past winter our team has carted over 90 loads of manure from Philadelphia, several of which I weighed and found 6,860 and 7,300 pounds clear of the wagon, which weighed alone 2,200 pounds, a combined weight of about 4½ tons. Many of these loads were drawn from the city to the point of leaving the stone road with only two horses, and the result has been the saving of over \$100 in my manure bill."

Worth saving—Eh! It would help out the bank account pretty well just now. Everybody knows a good road is better than a bad one. Grant it and then tell us why, if such knowledge is so general, you folks keep on paying your \$100 tribute to bad roads? "We pause for a reply?"

R. N. Yorker.

The Grazier and Breeder.

SOME "PLAIN ENGLISH"

ABOUT FEEDING VALUES

Inclosed is a tag containing an analysis of 'cream gluten meal.' In "plain English," what is its actual feeding value at present prices, assuming that the analysis is correct?

CREAM GLUTEN MEAL.

ANALYSIS, MADE BY

The Agricultural Experiment Station of New Hampshire.

Table with 2 columns: Component and Value. Water 6.52, Crude fat 18.11, Crude fiber 1.20, Crude protein 39.13, Nitrogen-free extract 34.28, Ash .76

Total per cent... 100.00

DIGESTIBLE NUTRIMENT.

Table with 2 columns: Component and Value. Albuminoids 33.26, Non-albuminoids 67.11

Nutritive ratio ... 1:2

East Union, N. Y. INQUIRER.

"Plain" English seems to be about the hardest English to write; much of it seems to be explain—that is, it probably was plain once, but is now a little mixed with science so that it needs explaining. This tag shows that the New Hampshire Experiment Station analyzed a sample of the cream gluten meal, and found the contents as shown. The contents of each bag have not been analyzed, but that statement is a very fair one for an average sample of the feed.

* * *

THERE are three chief compounds in food that go to sustain life. The "crude fat" is pure fat like butter or oil. "Crude fiber" is the portion of the food found in the form of woody fiber—hard and indigestible. "Crude protein" is the portion of the food that goes to make muscle in the body. "Nitrogen-free extract," frequently called "carbohydrates," is composed of starch, sugar, etc.—bodies that may, by digestion and assimilation, be used to make fat in the body. "Ash" is what is left after the whole food is thoroughly burned. The fats, of course, are more valuable than the "carbohydrates," just as butter is more digestible than crackers. Both are valued for making fat. The "protein" is the muscle-forming food, and must be present in any ration. In one sense these terms are almost analogous to "nitrogen," "potash" and "phosphoric acid" in fertilizers. Each has a special place or duty, and all must be present in a fertilizer to grow a crop. "Digestible nutriment" means the parts of these foods that may be digested by the animal on the same principle that fertilizer dealers claim that so much of their phosphoric acid is soluble in water.

* * *

In the above tag, the manufacturers confuse many buyers by changing the names. "Protein" is a word used to describe a number of different substances called "albuminoids," because they all contain more or less albumen, a substance like the white of an egg. "Non-albuminoids" are the parts of

the food that are digestible, yet do not contain any albumen, or musculo-making food. This will include the fats and carbohydrates as distinguished from the protein. The statement in the tag means that 33.26 pounds of the albuminoids in every 100 are digestible, while 5.87 pounds cannot be digested. The fats are worth more than the carbohydrates for feeding. How much more? Careful experiment puts the ratio at 2.2-5—that is, a pound of fat is worth as much as 2.2-5 pounds of carbohydrates. To make the table on the tag, the pounds of digestible fat were multiplied by 2.2-5, and added to the pounds of digestible carbohydrates. This gives 67.11, and, as expressed above, is apt to confuse many farmers. "Nutritive ratio" means the ratio of the muscle-making food to that which makes fat. As in this case, there is twice as much of the latter, this ratio is called 1 to 2. To make a good ration for a milch cow there ought to be about one part musculo-making to five of the other, so you can see why hay, stalks or some less concentrated food must be added to the meal.

Those who use fertilizers understand that nitrogen, potash and phosphoric acid are valued at certain prices per pound. These prices are determined by the trade values of different substances on the market. There is a movement on foot to adopt the same basis for valuing foods. At the New Jersey Experiment Station a mixture was made of equal parts of all feeds in general use. The exact value of a pound of this mixture was found by figuring out the average prices of each separate food. Then it was analyzed and a fair basis made for the price of fat, protein and carbohydrates. This figuring gave the following result—showing the average cost per pound:

Crude fat.....	5.91 cents
Crude protein.....	0.91
Carbohydrates, including fiber...	1.12

These prices are nearly as accurate as the prices given for estimating chemical fertilizers. Applying them to the analysis given above would give a valuation of \$36.40. Now this figure simply represents the comparative market value of this meal as compared with other grains. The feeding value must include other things—the effect of the food on milk or butter, for example. Corn meal for example, gives a hard, firm butter, while linseed gives a softer product. This effect is a part of the "feeding value" in one sense, yet as regards the actual amount of nutriment in the grains, this method of finding trade valuation is pretty reliable.

The following figures given by Prof. Voorhees will give an idea of the way food prices and values vary in New Jersey:

Cost per pound.	Selling price.	Valuation.
Protein	Fat	Carbohydrates
per ton	per ton	per ton
Buckwheat		
bran.....	0.47	3.05
0.75	5.52	1.05
Wheat bran.....	0.75	5.52
0.92	5.97	1.13
Ground oats.....	0.92	5.97
1.03	6.68	1.27
Corn meal.....	1.03	6.68
1.03	6.68	1.27
Wheat middlings.....	1.03	6.68
1.39	9.02	1.71
Rye feed.....	1.39	9.02

These are but samples of well-known feeds. They simply show that any general attempt to sell grain, like

fertilizers, by analysis, will result in an upsetting of prices—reduce the selling price of some feeds and increase that of others. It will also be easier for the farmer to estimate the value of what he is buying, and will lead to greater care and accuracy all around. There is surely a great difference between the price of protein in buckwheat bran and in rye feed. The table also illustrates why ground corn or oats command a higher price than the actual chemical composition would warrant. It is because of special values they possess, like that of giving "spirit" to horses or making a firm, hard butter. The whole thing is an interesting subject, and should be developed by our stations. As to cream gluten meal, it is a strong and reasonably cheap food—better for milk than for butter. (Rural N. Yorker.)

EXERCISE vs. CONFINEMENT.

ED. HOARD'S DAIRYMAN. -- How would it do to call a halt in the wild advocacy of "no exercise" and give more of intelligent consideration to possible results to succeeding generations of cows so treated? Possibly some modification of the extreme may be developed, a middle ground, safer and better suited to all sorts and conditions of dairyman.

Mr. John Gould compares the shelter of a cornstalk, of "general western conditions," with that provided for (ex) vice-president Morton's herd, and shrieks his ghoulish glee at the supposed rout of his opponents. As well compare Mr. Morton's treatment with that received by cows in a stable I saw last winter. Warm? Oh, yes. Ventilated? Oh no. "It costs money for feed to keep up animal heat." Cows cleaned? Oh yes, in the spring when all the hair came off on hips and half their sides. Because a man favors exercise with intelligent restrictions, is no reason why he should be swept by a blizzard in a tangle of barb-wire fence and cornstalks into a Colorado canon and buried beneath an everlasting snow-drift; nor because editor Hoard and John Gould favor housing in admirably conditioned stables, should they be confined in a low-ceiled, filthy stable, having no ventilation, with a lot of never-cleaned cows, in a foul atmosphere breathed and rebreathed thousands of times, and forced to grasp their noses till death ends their misery and the no exercise theory at one fell swoop. Literary pyrotechnics, tragic declamations, arms flying à la windmill, with contortions and grimaces that carry one in spirit to a circus or a theatre, are not argument one way or another.

Now, comes Mr. King with the logical conclusion that "a cow needs no more exercise from May to November than from November to May," and "in a very few years the successful dairymen will stable their cows the year round," a result devoutly to be hoped will never be reached. It may be possible to so treat cows that they will transmit to their offspring an adaptability to such methods, but I doubt it. What with the skill required to counteract the tendencies to abortion, indigestion and their long train of attendant ills, the weakened vitality of calves, that take a degree of care and knowledge to overcome that comparatively few can acquire, are difficulties which will prevent the adoption of such a course, as a rule, by the mass of dairy farmers. Jersey breeders tried it with their *pets* and we know the howl that resulted, not without

some foundation, of "weak constitution," "tuberculosis," etc., etc., raised by admirers of other breeds. I have personally known of eighty-five per cent of the calves and three or four cows dying in one year from a herd of something over one hundred and thirty cows, and a paralyzing fright of pleuro-pneumonia, as a direct result of injudicious housing. Better sanitary conditions and improved methods in the supply of sunshine, fresh air and exercise reduced the mortality to less than ten per cent of the calves the following year.

The average dairyman whose living and home depend upon the profits of his business, cannot any better afford to follow the fads of the wealthy, who adopt a fancy way of dairying as a diversion, from which no profits are expected, and for which they are willing to pay, than they can to give their cattle the warm shelter of a barb-wire fence or a cornstalk.

Would it not be well to get out of this realm of extravagant hyperbole and in plain, straight-forward terms direct the intelligent, humane dairyman to a middle ground between the two extremes. I am confident from my experience there is such a position and that it is the most profitable one, and shows how to combine fresh air, sunshine and exercise with clean, warm, ventilated stables and gentle treatment; shows how to couple fresh, luxuriant pasturage at night with succulent-oilage or ensilage; cool, darkened stables and freedom from flies in the day time; in a manner that will secure at once the health and comfort of the cows, strong constitutions in their progeny, and increased size of the creamery or cheese factory check for the month's product.

DRYING OFF COWS.

I think if Mr. Gardner would keep his cows from grass and succulent food, giving them only dry hay with just sufficient linseed meal to keep them from becoming too costive, and half milk them each time for a few days, then once a day, he will find no insurmountable difficulty in drying them off. I have not. (1)

Detroit. GEO. T. VANNORMAN.

The Garden and Orchard.

HORTICULTURAL NOTES.

Keep the soil moist and cool by cultivating often and thoroughly.

Give the sprouts from fruit and ornamental trees the same attention that you give to the weeds.

Electrified earth is the latest device for attempting to hasten the germination of and the growth of seeds.

Keep the garden busy growing useful crops; always have the ground occupied, otherwise it will be occupied with weeds.

When a young orchard is set out in a stiff sod and left to live or die, the most wonderful thing about it is that some of the trees will survive this treatment and live to bear several crops of fruit before succumbing to such gross negligence.

A cheap hand-weeder, which works splendidly, may be made by grinding an old case-knife on both sides and then bending the blade about two inches from the point.

When the farmer goes to his friends

(1) Very good.—Ed.

in the town and sees the trim rows of strawberry and raspberry plants loaded with berries, he begins to feel how foolish he was to depend for his supply upon the crops which grow in the fence corners. One row of good bushes is worth all the wild ones on a hundred acres. Every farmer should have a good assortment of small fruits for the use of his family.

The failure of fruit crops is as often due to the carelessness of the farmer as to bad seasons. Too many growers expect to raise fruit without working for it. A fruit farm will not run itself any more than any other business. Good culture, good pruning and the destruction of insect pests are necessary, so also is the application of some plant food; the average cultivator is slow to learn what amount of manure a bit of land pushed to its utmost will absorb. The market gardener is the man who best understands this, and he furnishes an object lesson that his neighbors can well afford to study.

The man who desires fruit should keep his trees healthy and vigorous, but to do this something must be done besides keeping them in grass, a crop of hay being taken off the land each year. A good plan is to pasture the orchard with sheep or pigs, for they will return the manure to the orchard and pick up all fallen apples, thus destroying the worms; but a better plan is to keep the soil cultivated, thus allowing the air to have access to the roots, keeping the soil moist in the droughts of summer.

Bagging of grapes, as a means of protecting them from birds, insects and rots, is steadily growing in popular favor. L. Miller gives his opinion in American Gardening as follows:—"The bagging of grapes at the proper time is a sure preventative of the rot; those that have failed must have made some mistake in their work. This practice is advisable on account of birds and insects, for they can so demoralize an acre of grapes that one cannot get sound bunches enough to make a fair exhibition of. All this can be prevented by bagging." He said he lost ninety per cent. of the grapes not bagged at the proper time. Begin operations just as soon as the fruit is set, no matter what the variety; if done sooner there is danger of imperfect pollination.

Few persons are aware to what alarming an extent the borers are infesting the orchards in the different sections of the country. A tree becomes unhealthy and eventually dwindles and dies, often without the owner having the least suspicion of the true cause—the gnawing worm within. The young, smooth barked trees are the most liable to damage from this cause, and, unless closely looked after, much damage may be done to them. There are two distinct species of the borer. Of these the most injurious, the round-headed borer, takes three years to mature, and is the larva of the striped *Laperda*, which lays its eggs at the collar of the tree, and the flat-headed borer which infests the limbs and the upper parts of the trunk. The beetles of both species lay their eggs about the same time—the last of June. Common kerosene emulsion or some alkaline wash applied to the trunk and limbs of the trees is very repulsive to this insect, and the female will not lay her eggs upon trees protected in this way. The orchard should be carefully examined several times during the season, and wherever the red sawdust exudes from the trunk of the tree a grub will be found. The little grubs which were hatched from eggs last year will be found actively at work now, and at they have not entered the sap-wood

yet, are easily found and dislodged: those that are a year old will be found gnawing away into the wood, taking a downward course towards the roots. A small, sharp gouge or piece of stiff wire makes a good tool to follow and dislodge the borer.

Farmer's Advocate.

THE HORTICULTURAL EXHIBITION

AT THE MONTREAL FAIR.

Horticulture has now obtained a degree of importance in all civilised countries, and its study and recognition by the masses is a proof of the healthy development and refinement of a community.

Therefore, the grand display of the Tropical and other beauties of nature in the horticultural department of the Montreal Exhibition and the manner in which it was crowded day by day, were not without significance as to the state of the public mind and the advancement in manners and ideas that are ennobling and elevating.

The management of this department is to be congratulated upon the admirable way in which the details were carried out. Enough attention has not been paid hitherto as to the plan and decorations of the buildings in which flower and fruit exhibitions are held, and while choice and elegant specimens may have been present, the arrangement of them has been so bad as to mar this beauty by the composition of the "tout ensemble."

This was not the case in the present instance. The decoration of the building by beautiful and graceful festoons of green suspended in such a way as to hide the ugly cross beams and rafters of the roof, while happily no bright coloured flags were used, as on former occasions, detracting from the brilliancy of foliage, fruits and flowers. Then, instead of hard, mechanical tables the plants were displayed on beautiful, natural soft green turf, forming a ground work to harmonise with and relieve all colours far better than any thing art could supply.

The monotony of length was broken in the centre by a canopy, supported by four pillars covered with white cloth and garlands of smilax. These pillars were unfortunately square, had they been round the effect would have been improved. From pillar to pillar were hung well grown specimens of the pitcher plant of different varieties and other like plants of a pendulous habit. In the centre was a fountain surrounded by a bank of lovely green turf and dotted with cut-blossoms of the charming hardy *Hydrangea paniculata*, *gladioli*, &c., and some fine specimen plants amongst which a fine plant of *Ficus elastica variegata*, *Dracenas*, *Lilies*, and a remarkably well grown group of *Salaginellas* were the most noticeable.

But the glory of the Exhibition as the groups of exotics arranged along the centre of the ground space on the velvet turf above alluded to. The first prize for group covering 100 feet of space was awarded to Mr. John Doyle and as to cleanness of culture, luxuriance of growth and artistic skill in arrangement, this magnificent group of plants was as near perfection as could well be conceived. The rich colors of the foliage of *Dracenas*, *Caladiums*, *alocasias bestons* &c., and the brilliant flowers of the new French cannas, contrasting or harmonising admirably with the delicate green of the feathery palm, the fragile *adiantum* or the symmetrical *auracaria excelsa*. There were

also in the group several new and rare plants of great beauty. This group did infinite credit to the exhibition and placed Mr. Doyle in the first rank as a skilful and careful cultivator and man of taste.

The group which was placed second in this class, shown by Mr. J. Beatrix, was no less worthy of favourable comment, it was truly a magnificent display as regards selection, cultivation and arrangement and the judges must have had a hard task to decide between the two. The splendid New Zealand tree-fern which surmounted this group was a revelation of what skill and careful attention can accomplish. Every frond was perfect and without a blemish, it is doubtful whether in its nature such a specimen could be found in such perfection. In fact, as near as possible absolute perfection was the leading characteristic in all the plants of which the whole group was composed.

These were the two leading groups, but there were also eight others, the whole centre space being occupied by them and all were deserving of the highest praise, the exhibitors being Messrs Doyle, Beatrix, Bennett, Roy, Davidson, Walsh, Kirkwood and Smith. The groups are the leading features of the Exhibition and no means could be adopted so well to display the gardeners' skill and taste. They are all above criticism and prove that we have an unusually active painstaking and spirited class of gardeners in Montreal, (to this fact doubtless the influence of the gardeners' club has, contributed in no small degree), however, the public owe them a debt of gratitude for the grand opportunity they have had of admiring the beauties of the tropics and the glories of the antipodes.

But we must allude to a few of the leading features of this great and successful exhibition: far surpassing any previous one ever held here and equal if not superior to any ever held in Canada. On entering the hall we could notice a fine lot of Tree-Ferns from the gardner to "The Forest & Stream Club" also some superb *adiantum* or maiden's hair ferns. A fine *Alsophylla* from Mr. Doyle and a *cyclobotruma* from Mr. Beatrix and three Australian Tree ferns from Mr. Walsh.

We also noticed a good specimen of the wonderful *Nepenthes* or pitcher plants with very large pitchers.

Mr. Pano'eau, the city gardener, showed some *gloxinias*: excellent examples of careful culture. Mr. Wiltshire was great as usual in orchids perhaps the most interesting and difficult to cultivate class of plants in nature, of which Mr. W. is evidently a master in his profession—among these were the new and scarce *odonto-glossum grande* and *va du carulea*, with pale blue flowers, a colour very scarce in orchids.

Then there was a fine young healthy specimen of the *araucaria excelsa* and a very large and perfect *lycopodium scandens*, climbing fern from the Montreal Botanic garden. A singular tree-fern from T. A. Dawes, of Lachine, and an extraordinarily perfect specimen of *Cycas revoluta* from Mr. Walsh, gardener, to W. W. Ogilvie, Esq.

Tuberous-rooted *bogonias* never were exhibited in such fine condition. They came from James Morgan, Esq., of Hocholaga, and the Forest and Stream Club. The six from the latter never were excelled for purity and profusion of bloom.

We also remarked a fine plant of the rare *Lapageria alba* in bloom.

Mr. Wiltshire exhibited a *Maranta regalis*, a curious plant, the largest of its tribe; also a variety of well grown and interesting palms.

Table plants were numerous and beautiful, some of which were admir-

ably adapted for table decorations, while others were too large and coarse.

The special prize offered by Mr. W. Ewing brought out several excellent collections of cut flowers.

And to Mr. F. Roy, of the Mount-Royal Cemetery (the indefatigable manager of the Horticultural department of the fair), the special prize of \$50 for the winner of the greatest number of prizes was awarded.

In cut flowers *Gladioli*, hardy *Phloxes* and *Pansies* were never better shown; the latter, as they should be, were exhibited with stems and foliage, and far exceeded in natural beauty the old method of flat trays, and no leaves attached.

We cannot omit Mr. Trussell's *geraniums*, in pots, which were excellent, being vigorous, dwarf, healthy and full of perfect trusses of bloom.

The display of vegetables was fine, Messrs. Hall and Davidson taking the lead. The new tomato *ponderosa* was shown by Mr. C. A. Smith and although *ponderous*, as its name implies, was solid and well ripened.

In the amateur class, Mr. T. W. Burdon, as usual, carried the palm of victory. If there were more competition in this class, it would be well. Mr. A. W. Somerville also appeared among the prize winners. It was rather early for fruit and scarcely any could be said to be in perfection.

However, there was a good exhibit, upon the whole, of apples, some pears, grapes, etc., but in consequence of their unripe condition they did not do justice to the varieties they represented.

Two very fine *hydrangeas* were brought in late, but a well deserved special was awarded to each. One from Mr. W. W. Ogilvie and the other from Mr. T. Holden. For the prize winners I must refer your readers to the published prize list.

It was a pity the building was not sufficiently large to contain all the specimens and some very fine ones, amongst which were the new French flowering cannas for which a special prize had been offered and was keenly competed for between Messrs. Doyle, Roy and others: they made a beautiful display.

They were protected by a new neat wire fence, exhibited by Strathy, McRae & Co., of Montreal, which was elegant, light and ornamental, but very strong, durable and cheap.

Since the horticultural display has proved such an attractive part of the Association's exhibition, it is to be hoped that the directors will see the expediency of enlarging and altering the building so as to contain a yet larger display and have it constructed in such a way as to admit the light from the roof, a great desideratum in a structure for floral and horticulture displays.

GEORGE MOORE.

POSTSCRIPT. — Quebec cattle at Toronto seems to have had in all their own way. In Jerseys, Mr. Reburn, of Ste-Anne de Bellevue, in Guernseys, Mr. Greenshields, of Danville, and in Ayreshires, Mr. James Drummond, of Petite Côte, carried all before them.

Hops will be dear this fall. The English crop is light—250,000 cwt. short—though many very superior gardens have been pocketed, the hop-harvest having been nearly finished by August 31st. The crop in the States is large, but as the Bavarian and other German gardens have yielded badly, the Americans will not have much to spare. The Bavarians are largely imported in common years to impart flavour to the ales brewed in the States.

MR. GEORGE MOORE wishes us to say that "in quality and artistic display, the Montreal Horticultural Exhibition far exceeded the Toronto show."

Canadian hay in the London market still keeps up in price: 130s. to 140s. a ton.

Correspondence.

Ste-Thérèse, Sept. 18th 1898.

DEAR JENNER FUST,

Very glad to hear from you, and very sorry that you did not spend the summer at Ste-Rose, where I might have seen you often. I regret to say that I was not able to carry out your prescription, with respect to the peat land I wished to lay down in permanent pasture for cows. I have not the slightest doubt that, had I been able to do so, the result would have been much more satisfactory. Instead of feeding off rape with sheep, I have only been able to follow the usual method here. I sowed a good variety of grass seeds, but I am fully convinced that the feeding off with the sheep would have been so much better. As I go into town by an early train, now, I shall probably find time occasionally to look you up in the morning, or between one and two P.M. should that hour suit you. I am sorry that I cannot write you a conscientious article about the horses, as I did not examine them sufficiently carefully.

There is much room for improvement in the way of management. The live stock should all be judged on the first day of the Exhibition and then people would be able to criticise prize winners and judging alike.

I saw one valuable addition to the thoroughbred stallion ranks, a nice horse, with substance and quality. Saltpetre, by Glenelg, out of Salina, by Lexington.

He unfortunately stands at Cornwall, not in the Island of Montreal. Old Quito has been purchased by an Ontario man.

Glenelg was by Citadel, a son of Stockwell, so that you see Saltpetre is a nicely bred horse. We now have fewer horses than ever on the Island of Montreal, from which to breed useful half bred horses.

The following I copy from the Saltpetre service-card, which contains some salutary advice:

"Sir, I have been delighted to read the strictures of your reporter on the class of horses offered to the English officers sent here to buy army remounts. His allusions to the happy-go lucky use of hairy-legged Clyde stallions—on the lighter mares of the country are perfectly justified. The promiscuous use of such sires is as unfortunate in a commercial sense as the restricted use of them in their own class is profitable and beneficial. The country is swarming with slab-sided mongrels, the get of magnificent heavy draught horses from scrub mares. The farmers are all the time breeding down instead of up, and it is to be hoped this renewed failure of the English officers to find the class of horses they want will induce owners to patronise the thoroughbred blood horse who alone can get such animals as all the governments of Europe are prepared to take from us in unlimited numbers. By neglecting to use the thoroughbred stallion, the Americans are driven to Canada to purchase their saddle horses, and it is hard enough to find them here. We should take a lesson from this state of things across the border, which

is attributable to the too general use of the light harness sire, in other words of the trotter, whereby straight shoulders and want of withers have been perpetuated, and the essential points of the saddle or cavalry horse willfully bred out. They would undo this error now, if they could, an error which has made for Canada and Kentucky millions of dollars. But for every dollar we have made, a hundred might have been made, if the farmer would put his big half bred mare to a thorough bred horse. His scrub mare had better doom to sterility. Before closing I would say one word of the failure of the English officers to get the horses they want. They must see exactly the horses they do want, (every other man would) in the streets of Toronto. Many are still in the country, and to be bought, but not in Toronto at regulation price.

Our saddle horses have been brought here by middlemen, who, pay, as a rule, less than the sum to which the officers are limited. If experienced buyers hunt the concession lines and county towns for saddle horse at first cost they are procurable. And if the right horses can be got by other people, it might strike the officers that their past and present modus operandi are capable of improvements. I am strongly of opinion that much of the fault lies with themselves. BREEDER.

The foregoing applies to Ontario. As to Quebec, the farmers here have not the right kind of mares, but it is astonishing what saleable horses a thoroughbred stallion will get out of even common cart mares. I do not think that this is the right way to breed the saddle horse or hunter, still you get a very saleable horse. His deficiencies are not apparent until he has been pretty severely tried, and, if not a first class saddle horse, or hunter, he will do for carriage work, or work on the farm. In Ontario, there are lots of thoroughbred horses, all over the country. Here we have very few. Oh! for a few good hackneys distributed throughout the province of Quebec.

Yours truly,
C. F. BOUTHILLIER.

I think what pleased me most among the live stock, was the herd of Guernseys of Mr. Greenshields. There are a splendid lot a long way the best I have yet seen in this country. And yet, I believe that he can get hardly any one to buy his surplus bull calves!!!

The Household.

SUGGESTIONS FOR BREAKFAST.

Few women realize the importance of a good, well-cooked breakfast for men before starting on a day of toil. By good, I do not mean luxurious, but food plain, wholesome and nutritious. The average breakfast is a slap-dash affair, cooked over the first fire, some of the food overdone, some the contrary, but with a hurried feeling that it must be served as soon as possible. If porridge be served it will not boil in less than one hour; this can be steamed the day before when the fire is going for cooking dinner, and enough can be steamed to last several times. Toast will only take a few minutes, as it is better served as soon after making as possible. Bacon should be fried over a slow fire, or it gets hard. Scrambled eggs over a slow fire also, or scorching will spoil their delicious flavor. Pancakes must be carefully

mixed, their ingredients properly measured to ensure success, and then cooked over a moderate fire. Potatoes require a full half-hour to boil, and one hour to bake. Raised bread and buns are better made the night before, as they are sometimes slow to rise, and they are just as nice warmed over, or split open and toasted. Pop-over gems and Graham muffins can be made within the hour—the oven will be the proper heat when you have them mixed. Fish of any sort should be fried over a slow fire in plenty of fat, and before dishing the hard outerskin removed. Tea, coffee or chocolate must not be hurried—the water must be boiling for all of them. Never draw tea with any but boiling water, and infuse for twenty minutes. Beefsteak will cook on a hot pan in twelve minutes, keeping it turned constantly. Dish on a hot dish with a pat of butter under it. Rice cannot be boiled under half an hour, and steamed it will require one hour over a good fire. Apples will bake in half an hour. Milk will boil in ten minutes. These are a few of the simple, wholesome dishes that can be readily prepared, and what a difference the proper preparation does make. A few sprigs of parsley, mint, celery, carrot or beet leaves around the breakfast dishes make so much difference in their appetizing appearance. I have not mentioned the large variety of cold meats that can be sliced thin, nor the left over chicken that can be dipped in butter, and fried in a covered pan with hot fat. We have all the materials for the most luxurious living within our control, for no first class hotel could furnish more than mentioned here. One or other should be selected for breakfast the night before, then there is no delay in the morning. Lay your table neatly while the fire is getting warm, if you have to do this yourself, then when all is ready the breakfast can be brought in hot and tempting. Have your pitcher of milk or cream in a cool place over night. The appetites produced by fresh air and a night's refreshing sleep will want no appetizer to do justice to the breakfast you have set before them.

Farmer's Advocate. (1)

DISH-WASHING MADE EASY.

A little insight into the science will lighten the matter wonderfully. First remove the food from the table; then scrape every dish free from crumbs; empty all cups into a slop bowl; pile the plates on the top of each other (largest at the bottom); gather knives, forks and spoons into a convenient dish, and convey all to the sink. Place a gallon, more or less, of hot, soft water in the dish-pan, add to it a little soap, and with a clean dish-cloth commence on the glass and silver, ending with tins and kettles. Throw out the dish-water, rinse the dish pan, then rinse in hot water the glass and silver, wiping dry. Place in the plates with the cups and saucers, and turn hot water over them, then place on a rack to drain and wipe dry as soon as possible. One will be astonished at the fun of washing dishes in this way, and they will be finished up so quickly that you will wonder what has become of them.

(Cultivator.)

(1) Oh! 7 or 8 minutes for black and green, but 30 minutes for Japan.—Ed.
(2) Our idea is that only farmers, &c., should eat much breakfast.—Ed.

Swine.

PORK MAKING WITHOUT GRAIN.

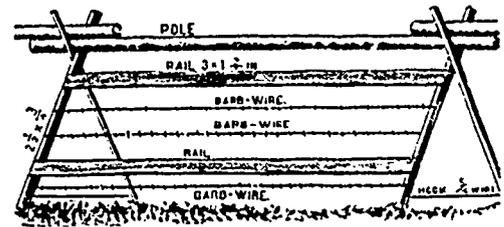
F. E. S., Dehesa, Cal.—1. Can hogs be grown on beets, squashes, mangel-wurtzels, Alfalfa or clover? 2. Can they be fattened on this feed at a profit without grain? 3. What would be the best and most profitable way to feed it? 4. What is the best strain of hogs to grow for the market—meaning those that will grow the largest on the least feed?

Ans.—1 and 2. Hogs can certainly be raised with profit on Alfalfa and squashes. A few years ago I was ranching in a remote valley in eastern Utah. We were entirely self-dependent, as there was no wagon road—so tried to make our own meat as far as practicable. Our hogs were kept in a pen—owing to scarcity of fencing material—and fed all summer on green cut Lucern or Alfalfa. This made them grow and thrive very well. It would have been better could they have been on a Lucern pasture—not too large in area—so that they could keep it down pretty well and eat it off while tender. In winter we used to feed our stock hogs on cured Lucern hay. On this they kept in good thrifty breeding condition. As we could not raise corn or grain to very good advantage on this ranch, we fed largely on pumpkins and squashes in the fall and found that Hubbard squashes would fatten the spring pigs very well and those that were a year old even better. 3. Yes; I believe it would be better if some kind of dry food could have been fed along with the succulent—for instance, wheat middlings or chopped barley, either of which should be

WHAT A GOOD SOW WILL DO.

THE R. N.-Y., is undoubtedly right in its belief as to some brood sows being worth more than others. Some are more prolific and some are better sucklers than others and are more kind to their young and to the person attending them. I think it is well to use good judgment in selecting sows for breeding purposes. My plan is to select one of good length and deep up and down through the body and carrying the size well back to the quarters. I also want one well rounded out in hams and straight on the back. I keep none but purebred stock, and don't breed until the sow will be one year old or over when she drops her first pigs. I want the latter to come about the middle of March and last of September—two litters a year.

Here is the income from a registered Poland China sow, beginning March 20, 1892, and ending March 20, 1893. She had seven pigs each time: the first seven were fattened and killed January 1, 1893, weighed 1,750 pounds gross, and sold for 7½ cents or \$126.87 in all. The September pigs—seven in number—I have yet; but on March 20, when one year old they would weigh 700 pounds and could have been sold a dozen times for \$55, so that the sow's income would be \$126.87 x \$55, or a total of \$181.87. This statement can be verified by affidavits, but it should be remembered that hogs were high last year and are high yet. Take the same account at the prices received in years past and the result would be quite different. As



ANOTHER PORTABLE FENCE.

cheap and abundant in California. Here in Ohio I raise immense crops of pumpkins on which I feed sows and pigs as long as they last. They also have free access to a self-feeder in which I place 15 to 20 bushels of ship-stuff—dry. They take courses of pumpkins and ship stuff, as their appetite demands. We do not cut the pumpkins, or cook them, or do anything at all but haul them out a wagon-load at a time. If cut, the pigs will eat out the soft inside and the seeds the first thing. I have never tried beets and do not know certainly that they would be good, but I believe they would and advise an experiment with them if they can be raised cheaply, as no doubt they can. I should use the sweetest beets I could produce. These green succulent foods produce pork of the best quality, and also keep the swine in excellent health. 4. As to breeds, there is a difference, no doubt. Personally I prefer the Poland-China, but no doubt the Jersey Reds would be good, and I have seen a good cross of these two breeds, combining the good points of each, and being very prolific. (1)

Central, Ohio. J. E. WING.
(R.-N. Yorker.)

(1) We have heard, from a most successful farmer in England, that mangels given to pregnant sows after cause obtention.—Ed.

to the amount in dollars and cents, it requires care and attention to raise two litters per sow each year, and it also requires the same to make the pigs weigh 250 to 300 pounds at January 1, when nine months of age. It does not pay any hog raiser to let his pigs stop growing. I do not crowd my pigs, but I do not allow them to squeal or root for food.

Sombody asked not long ago about keeping old sows to breed: I keep mine just as long as they do well; my oldest one now whose performances are reported above is five years old. She has nine fine pigs now, dropped March 19, 1893, and is due to farrow again on September 6. I can handle her like a dog, she is so gentle, and I try to have all my pigs the same, for meat can be put on a gentle faster than on a wild pig. The expenditure of neither time nor money prevents me from breeding to the best I can find. This will apply to all kinds of stock as well as to hogs.

Miami County, Ohio.

DARIUS ROSS.

SOME OF THE EXHIBITS

To be Seen on Various Parts of the Exhibition Grounds.

One end of the gallery of the main building is occupied by Mr. L. E. N. Pratte, piano manufacturer, of 1676 Notre Dame street, Montreal. The space has been elegantly draped with fine specimens of tapestry in imitation of the hangings from old looms. The central exhibit in this large selection is a handsome vocalion, by Mason and Risch. This instrument has two manuals and pedals and twenty-two stops, including all the customary couplers. It is intended to supersede the more expensive pipe organ in church services, for which it is also specially adapted as a vocalion does not require tuning nearly so frequently as an organ. It is rich and even in tone, very powerful and in every way a fine instrument. The pianos exhibited are in varied, rich and beautiful styles, and all of them manufactured at Mr. Pratte's factory. These pianos are specially calculated for persons of genuine musical taste, and that they perfectly fulfill that intention is shown by the fact that Madame Albany, Canada's great mistress of song, Mr. Edward Lloyd, and other artists of note have written of them in terms of the highest commendation, whilst most of the Montreal artists have purchased instruments for their own use. Mr. Pratte studies above all to reach the highest grade in quality. He has introduced into his pianos a new patent action far more desirable than any other produced in America up to this date. The cases are made in rare and beautiful woods, specimens being exhibited in anyx woods, satinwood, Brazilian rosewood, prima vera, Brazilian mahogany, Caucasian walnut and Persian walnut. There is also an excellent Aeolian self-playing organ, in which by means of a mechanical apparatus anyone can play the most difficult compositions with expression. Amongst the instruments is an old-fashioned piano made in London, England, by Clementi, in 1798, and surmounted by an exhibit showing the progress made in the manufacture of a portion of the action of pianos from the year 1797 down to the present date. This latter item is most interesting to the curious visitor.

CASH FOR FEATHERS

We are paying cash for all kinds of feathers. JUNE is the month when farmers should pluck their geese, as otherwise the feathers are lost. Send the samples of what you have and we will quote you the best prices for them.

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TO FRUIT GROWERS

The attention of our readers is called to the advertisement of the Blymyer Iron Works Co., of Cincinnati, Ohio, which appears in this issue. Their Zimmerman Evaporators for Fruits and Vegetables have for many years been looked upon as the Standard Machines. Parties in want of Evaporating machinery will do well to write for their catalogue.

CONSUMPTION CURED.

An old physician, retired from practice, had placed in his hands by an East India missionary the formula of a simple vegetable remedy for the speedy and permanent cure of Consumption, Bronchitis, Catarrh, Asthma and all Throat and Lung Affections, also a positive and radical cure for Nervous Debility and all Nervous Complaints. Having tested its wonderful curative powers in thousands of cases, and desiring to relieve human suffering, I will send free of charge to all who wish it, this recipe, in German, French or English, with full directions for preparing and using. Sent by mail, by addressing, with stamp, naming this paper.

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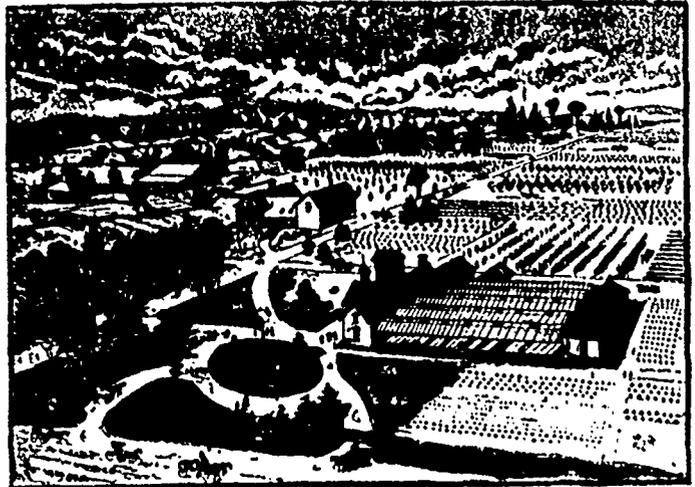
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Send me your address and I will show you how to make \$3 a day; absolutely sure; I furnish the work and teach you free; you work in the locality where you live. Send me your address and I will explain the business fully; remember, I guarantee a clear profit of \$3 for every day's work; absolutely sure; don't fail to write to-day.

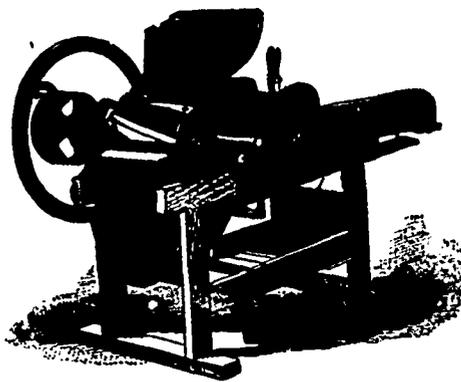
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14 Two horses power	\$60.00

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Season of 1892: Number of services:

- Napierville: 70.—Gaspé: 107.—Missisquoi: 79.—Vaudrouil: 37.—
- Chicoutimi: 37.—Three-Riviers: 55.—Bellechasse: 59.—
- Montreal: 103.—Ottawa: 106.—Nappan: 96—
- Braudon: 39.—Indian Head: 63—
- Agassiz: 27.

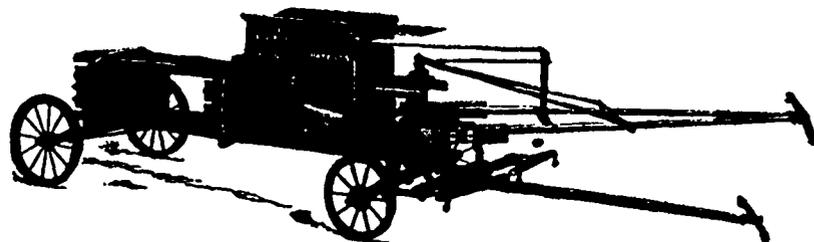
Percentage of colts born in 1892 from the Haras National Stallions 70.74 %
 Percentage of colts, 1892, Haras of Franco 54 %
 Percentage of colts, 1892, Haras of Germany 53.30

AUZIAS-TURENNE,
Man. Director.

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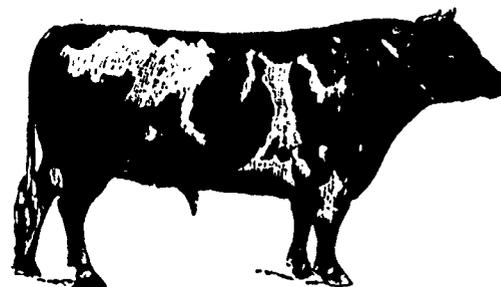
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